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HANDBOOK
OF
THE COLLECTION

I

INTRODUCTION

THE casual visitor to a modern museum is apt to know little of ancient Arms and Armor, and he may not realize that among connoisseurs these objects rank high in the scale of *objets d'art* —with ceramics, enamels, bronzes, even paintings. For one reason, unless he happens to know the famous collections in a few European capitals, he has probably seen few specimens of armor of good quality. And he does not take into account that the art of the armorer, like the art of the painter or sculptor, can not be well appreciated from poor examples. On the other hand, the every-day visitor to a museum usually associates arms and armor with the elaborately developed panoplies of the sixteenth century—of the time of the Italian wars and of the Field of the Cloth of Gold—and he pictures armor as a ceremonial equipment, etched, gilded, and embossed, worn as often in the court as in the camp, when swords were richly wrought, incrusted with silver and gold, and when halberds, which so often form an attractive portion of the sky-line in pictures of those days,

were fretted, etched, and gilded, their long shafts sheathed in velvet, and rich with silk tassels and gilded studs. These splendid equipments, it is true, represent an important side of the armorer's art. But it is equally true, from an artistic standpoint, that some of the most interesting objects were the earlier and simpler types which were beautiful rather in their lines and surfaces than in their mere enrichment.

It is, then, from an examination of good specimens of armor and arms of various periods that one realizes that they well deserve their place in a museum of art. And in this conclusion we need consider neither their historical value, as a means of picturing more accurately scenes and personages of known periods, nor their sentimental interest—which they possess to a degree rarely found in other objects of art—nor their supposed mystical significance. In the last regard, we recall the myths of god-like armorers and enchanted arms, which belonged to all early times and to all peoples.

Unfortunately for the general public, representative collections of these objects were not to be seen, until late years at least, on this side of the Atlantic. And even abroad few museums exhibited armor adequately. In fact, in the case of European armor, about ninety per cent of the best examples extant are restricted to but seven national European collections, i. e., Vienna, Madrid, Paris, Dresden, Turin, London, and Petrograd—collections which, by the way, are not of public or popular origin, for they de-

scend in large part from the treasures of princely houses.

In the United States few collections of armor and arms have been exhibited. Of European arms, aside from those shown at various times in the present Museum, there has been, as far as the writer is aware, only one really representative collection placed on public view. This was in Chicago in 1893, when the collection of privy-councilor Zschille of Grossenhain was exhibited at the World's Fair.

But what has become of the rest of the early armor and splendid arms? Surely in their day these objects were abundant and one may well query why many of them have not come down to our present time. The reason for this is complex. For one thing, during the past two centuries, when armor disappeared from use, there has been little interest in the armorer's art. Then, too, modern warfare, with its constant improvement in fire-arms, discouraged and actually destroyed it. Armor became burdensome and useless, possibly dangerous; and when it finally lost its dignity, it was soon forgotten. War, too, with its almost yearly changes in equipments during the last centuries, caused every struggling nation to prepare its arms as cheaply as possible; and under this condition even the best work was of little artistic value. Hence, the view became widespread that the work of the armorer represented a low branch of an artist's profession. Even the government of the United States took this point of view, and a few years ago, a casque executed for Francis I by a Negroli and

designed by Cellini would have been held on our frontiers and assessed for duty as "manufactured metal ware"! It came about, accordingly, in a period of disregard for the work of the ancient armorer that the objects of his art were destroyed, and in many ways. One hears of precious harnesses falling into the hands of artisans. Thus in Munich the gate of the botanical garden was made early in the last century of forged iron obtained from a collection of ancient armor (said to be largely Gothic!) from the garrets of the royal palace of Munich. Casques and bucklers enriched with gold were broken up to recover a trifling amount of precious metal. One of the best head-pieces in our collection was purchased from a stable boy; another was found in a Rhenish grocery shop in use as a meal-measure. About the time of the French Revolution, a number of ancient armories were dispersed and priceless armor was sold by weight—to be converted into horseshoes or pike-heads. In this connection, one should also take into account the fact that armor is not easily kept in order, and, if neglected, it rusts and speedily loses much of its attractiveness. Furthermore, it was at all times a costly matter to keep an armory in repair; and there is probably no kind of collection which requires greater attention, more skilful care, or larger outlays. When this attention was not given, the objects showed neglect so obviously that they were apt to find their way out of sight. Thus it happened in the course of centuries that important armor was removed from a position of prominence in



PLATE I

EGYPTIAN PREDYNASTIC FLINT SWORD
BABYLONIAN SWORD, XIV CENTURY B. C.

SEE PAGES 20, 24

castle and manor, and found its way into lumber-rooms where, as in the instance of the admirable harness of Sir James Scudamore now shown in our collection, it suffered great neglect. As a matter of fact, under such conditions, when one looks into an ancient chest at the dismembered and disintegrating bits of armor, it takes not a little imagination to picture the former magnificence of the entire suit; its beauty of outline, its delicately engraved ornaments, its crisply fluted and russeted surface, its mountings in silk velvet and gold galloon, its close-fitting symmetry, which made it appear molded to the living body of its wearer.

On the other hand, in earlier times, armor and arms were among the most prized possessions of noble and commoner. They were objects, indeed, no less useful than beautiful. It was not unnatural, therefore, that the man who made them was looked upon everywhere as an artist who belonged to an ancient and honorable guild. He had access at all times to courts and camps and his work was munificently rewarded. A great swordsmith, Serafino di Brescia, was accepted by such an art lover as Francis I as equal in rank with Titian. The Negroli were ennobled, fortune and fame came to the Colman family through the Austrian emperors, and the imperial Maximilian is pictured in his workshop with his hand upon the shoulder of the master-armorer Seusenhofer. In those days, no painter was too distinguished to act as a designer for military panoplies. Raphael and Michelangelo made studies for the

equipments of the papal court; Dürer prepared designs for the armor and arms of Maximilian; Leonardo was singularly fertile in similar work; Cellini not only designed but executed shields and hilts of rapiers and poignards. Among the artists who are known to have taken a part in the armorer's "trade" were Titian, Gian Bologna, Giulio Romano, Holbein, Peter Vischer, and Donatello.

But the real armorer was evidently he who both designed his objects and executed them as well. And in this he followed an art whose technical difficulties were extreme. His work was to stand the test of service, therefore it was modeled in steel; and of this refractory material he formed objects of the hardest texture, whose thickness was great only at the points where actually needed, whose total weight was reduced to a minimum—yet with all this they should be beautiful. Nor did this mean that armor should attract chiefly from its decoration or enrichment. The artist's greatest work, whether casque, gauntlet, or sword-hilt, was like a Greek vase, beautiful in the effect of its shadows, in its movement and contour. During the greatest period of the European armorers, say between 1450 and 1530, even a detached piece—a shoulder, backplate, gauntlet, or greave—had in some degree the merit of a fragment of classical sculpture. Not merely are its lines expressed beautifully, but one feels that it has within it something living. What this implies from the technical standpoint is realized more clearly when one watches a workman copying an ancient





PLATE II

BRONZE ARMOR, ITALIC
VII (?) CENTURY B.C.

SEE PAGE 26

piece and sees how fully he is taxing both his hand and his judgment. Thus when modeling an object he may at one point heat the metal to excess, and thereby spoil his piece; his few extra hammer strokes may weaken the work at a critical point; or he cannot develop a desired contour if at the beginning the "pushing" or spreading of the metal be not begun at a definite distance from the margin of the plate.

In a word, in former centuries the work of the armorer was a living art and its technical interest was well understood even by laymen. Today, on the other hand, it is an art well nigh extinct, and there are not many, even among amateurs, who appreciate how subtle and difficult it was. Its processes were varied and a knowledge of them was often guarded jealously, as the heritage of artist families or of ancient guilds. Its implements were things apart, with scores of curiously shaped hammers and anvils, and with a formidable battery of eccentric pincers, files, saws, and vises—objects which their owners sometimes elaborately ornamented, incised, and sculptured. In fact, the ancient anvil,[1] the pride of some sixteenth-century armorer, which is exhibited in the present gallery (H 9, near Case 48), will to some visitors be of greater interest than the armor itself.

There are in fact few copyists today who would attempt a real armorer's task. And modern work has ever in it a hardness of line. Persuade an artist to copy, for example, the comb of a morion. This

[1] This, together with a sculptured vise, was lately borrowed by the Museum from the collection of Ambrose Monell of Tuxedo.

is the crest or ridge encircling the top of a somewhat hat-shaped head-piece, which the old armorer would develop out of a simple piece of metal to a height of six inches, and at the same time leave the maximum strength at the top of the crest where it was needed. If a modern copyist attempted such a task, his result would be lacking in finished symmetry or in the graduation in the thickness of the metal in the exposed parts. The only artist who might become a dangerous *faussaire* is the one who would be willing to copy the same object scores of times.

II

THE PRESENT COLLECTION AND ITS ARRANGEMENT

THE earliest arms and armor in the Museum collection are to be seen in the Bronze Room (D 12), in several of the Egyptian rooms (D 3, E1, 3), and in the room devoted to Cretan reproductions (H 4). All later specimens, which together represent over nine-tenths of the collection, have now been brought together from all sources and installed in four galleries in Addition H. European specimens appear in the main gallery (H 9), and in the large north room (H 8); Japanese armor is displayed in a room (H 6) east of the main gallery, and the remaining Oriental arms in a room adjacent to this (H 5).[1] In these galleries an arrangement has been followed which aims to furnish an outline of the armorer's art in various countries and more or less in a chronological sequence. For this reason, the visitor is recommended to consult the diagram of the gal-

[1] The corner gallery (H 7) is not as yet arranged for exhibition. It will contain a part of the William H. Riggs Armor and Art Donation, including contemporary portraits of knights in armor, Renaissance furniture, stained glass, early tournament books, and similar documents relating to arms.

leries, Plate LXV, and follow approximately the path which is there outlined. He should accordingly examine first of all the European objects. Entering the main gallery near the staircase of the elevator, he finds in front of him and at the right the earlier objects—Frankish arms, a few head-pieces and fragments of armor antedating A. D. 1400, and a series of cases of chain-mail and "Gothic" suits of armor, saddles, casques, and various arms earlier than 1500. The visitor should now turn to the left into the middle of the main hall and passing the equestrian figures, which are arranged somewhat in order of time, go back to his first position. Turning to the west, he next examines the arms of the "Maximilian period," when during the early decades of the sixteenth century elaborately fluted armor was developed. He then continues along the west side of the main gallery, viewing the panoplies of the mid-years of the sixteenth century. In this direction he will be led into the large north room containing the richly decorated harnesses and arms of the middle and second half of the same century, these including a number of historical and princely objects. From this room he returns to the northeast corner of the main gallery, where the latest European armor is displayed. Here are the heavy, sometimes grotesque suits and half-suits which are typical of the seventeenth century, when crude workmanship suggests that gunpowder was in frequent use and that little was spent in equipments which might cheaply be destroyed.



PLATE III

ETRUSCAN CHARIOT

VI CENTURY B.C.

SEE PAGE 26

After completing his review of European Armor and Arms the visitor enters the Japanese Hall. At his left are arms of the stone, bronze, and early iron ages. Immediately in front are partial suits of armor, dating from 1200 to 1500 A. D., which are of no little interest to the student, for they belong to the period which the Japanese look upon as the "golden age" of their national art. These objects are apparently the only ones of their kind that have found their way out of Japan. In the middle of the room are series of harnesses of the sixteenth, seventeenth, but mainly eighteenth century, together with associated arms. Among them are numerous examples of the workmanship of the Miochin family of armorers. Here, too, is the horse-equipment of a prince of Inaba. On either side of this are corselets, helmets, and detached pieces of armor. On the walls are pole-arms, surcoats, bows, quivers, and banners, including (in a frame) the war banner of Prince Daté Masamuné of Sendai (died 1636). At the south end of this gallery are cases of swords and sword-guards, fire-arms, and helmets. The latest objects in the Japanese military equipment here shown date to about the time of the overthrow of the Shogunate in 1868.

The ceiling of this hall is worthy of careful examination. It is decorated with the *mon* (crests) of the principal families of old Japan. Their names are given in a diagram as Plate LX.

Passing into the next room to the south (H 5) the visitor may examine other Oriental arms. Here are

Turkish, Persian, and Indian head-pieces, which date from the fifteenth to the seventeenth century, and are of excellent workmanship.[1] Of these the earlier ones are of unusual diameter to enable them to be worn over large turbans. In a number of instances they are elaborately embossed and decorated with incised patterns and overlays of precious metals. Good examples of Oriental mail may also be examined. Among the swords here shown are several whose ancient "Damascus" blades are composed of many fine layers of steel. One sword is of particular interest. Its blade is European, but its hilt was made by a Moorish artist and elaborately decorated with enamels; it belonged for centuries in the family of the Marquis de los dos Aquas of Valencia, and, with the leather despatch (or Koran) case accompanying it, was treasured as a relic of the "unlucky" Boabdil, the last king of Granada. (Plate LXI.) Whether this tradition be true or not, this Hispano-Arab sword is a great rarity—only nine specimens of its type are described. In neighboring cases and panoplies are shields, breastplates, and gauntlets of Persian and North Indian origin. They are usually made of Damascus steel and elaborately decorated. There are also Malayan krisses, Persian daggers and swords, and enriched Oriental guns, many of these lent by George C. Stone. Especially noteworthy is Mr.

[1] A few Oriental arms are shown in the Moore Gallery (E 12). These include an excellent Persian casque and corselet, and a Cingalese gun, the last a very rare object. Mr. George C. Stone tells the writer that he knows but three other examples, one in the South Kensington Museum and two in Russian collections.



PLATE IV

GREEK WARRIORS. FROM ANDOCIDES VASE
END OF VI CENTURY B.C.

SEE PAGE 28

Stone's series of fist-daggers (*katâh*) and a gauntlet sword from the Walhouse Collection and the state armory of the Maharaja Sivaji, the last king of Tanjore.

In following the directions given in the preceding paragraphs, the visitor will find before him all arms and armor now on exhibition. Should he wish additional data for the study of armor, he is recommended to visit the halls where the plaster casts are shown (A 30, 31, 32, 33, 38). Here he will find reproductions of well-known monumental effigies and portrait statues dating from the fifteenth and sixteenth centuries. Among these we may note Gattamelata, 1453; Otho of Henneberg, 1487; Colleoni, 1493; Guidarello Guidarelli, 1501; Hermann VIII of Henneberg, 1508; several of Peter Vischer's kingly statues in the Innsbruck church, 1513; Gaston de Foix, 1515; Francis I, about 1520; Engelbert of Nassau, about 1525; Joachim of Brandenburg, 1530; Charles IX, 1571. There are also a few important original statues in stone and wood (Addition F) which will repay examination. And in the Morgan Collection (H 11–15, 19) there are numbers of admirable contemporary representations in armor, in ivory, wood, stone, enamels, and paintings. We may mention finally that galvanoplastic reproductions of a number of well-known arms and embossed pieces of armor may be examined in the basement hall of Addition H, including notable specimens from the Petrograd Collection.

THE ORIGIN OF THE MUSEUM COLLECTION OF ARMOR

Rutherfurd Stuyvesant, Vice-President (1904–5) and Trustee from 1870 to the time of his death in 1909, was greatly interested in the study of armor, and during his long association with the Museum, he spared no effort to show to the art-loving people of New York good examples of the work of the artist-armorers. His own extensive collection was several times placed at the service of the Museum, and his gifts were important. His purchases at the Spitzer sale (1895), where he secured some of the capital pieces, were at once sent to the Museum, where they have ever since been exhibited.[1] He it was who, supported by J. Pierpont Morgan, negotiated the purchase in 1904, of the collection of the Duke de Dino: this had been formed by a wealthy French amateur under the advice of the well-known expert, Baron de Cosson.

Previous to this, Mr. Stuyvesant expertised and recommended for acceptance by the Museum the small but valuable collection which forms the nucleus of the present exhibition. This included arms and detached pieces of armor, together with several suits and half-suits which had been secured by John S. Ellis, of Westchester, between 1865 and 1890. They were presented to the Museum in 1896 in Mr. Ellis's memory by his son, Augustus Van Horne Ellis. Until 1910, this collection remained in a sepa-

[1] Since 1909 generously lent by Madame Rutherfurd Stuyvesant.



PLATE V

ROMAN AND DACIAN SOLDIERS
FROM TRAJAN'S COLUMN, II CENTURY A.D.

SEE PAGE 29

rate gallery in Addition C (31). (See catalogue of Arms and Armor, Metropolitan Museum of Art, 1905.) It was later transferred to Gallery 6 in Addition D, near the de Dino Collection, so that all the Museum's armor and arms could be examined together conveniently.

Various additions have come to the galleries since the installation of the de Dino objects. Purchases were made; some interesting arms from the collection of William Cruger Pell were presented (1906) by his daughter, Mrs. Ridgely Hunt; a series of Persian and Turkish arms was given by William B. Osgood Field; and in the Moore Collection were similar and admirable specimens. In 1903, a loan collection of Japanese armor was exhibited which, excepting two specimens, has since remained on exhibition, and with this were exhibited the Japanese swords of Brayton Ives which were secured in 1891. Accessions to the Japanese armor collection came in 1910 in the gift of the dozen or more harnesses, with accessories, of excellent workmanship, which Dr. George M. Lefferts gathered in Japan about 1893; also in the objects secured by the curator in Japan in 1905, which he lately donated. These included many early pieces, notably those from the well-known Kawasaki Collection of Tokyo. The most recent accession in this field is the series of sword-guards presented by Mrs. Adrian H. Joline (1914).

A few arms of the Bronze Age and of classical antiquity had been represented in the Cypriote Collection of General di Cesnola—subsequent purchases

(1903, 1907, 1909) yielded a dozen or more important objects in this early field, including casques, plastrons, and shield bosses. Of supreme interest is the Etruscan chariot acquired in 1903.

Of arms of the Middle Ages and the Renaissance, purchases have been made in recent years in various European sales, including the Whawell-Thill in Munich in 1908, and the Keucheleff-Bezborodka in Paris in 1912. In this year, also, two historical suits were obtained from the Earl of Chesterfield—they had been made about 1585 for Sir James Scudamore, in the English state armory at Greenwich, by or under the direction of the master-armorer, Jacobe.

To the Metropolitan Museum the year 1913 was in many directions the most important in its history. To its arms and armor it now added the William Henry Riggs Donation. This included, in fact, the entire collection of this well-known amateur, not only arms, but contemporary portraits of armored knights, a library upon armor, numerous pieces of Renaissance furniture, and panels of stained glass—a benefaction to the Museum which up to that time was second only in importance to the Rogers Bequest.

Mr. Riggs (see Bulletin of The Metropolitan Museum of Art, March, 1914, pp. 66–74) was born in New York, but from the early fifties had made his home in Paris, where, in the greatest art market in the world, he was in constant touch with collectors and antiquity merchants. For over sixty years he devoted his time and fortune to his life-work. This



PLATE VI

FRANKISH SOLDIER, VI CENTURY A.D.
AFTER GIMBEL

SEE PAGE 33

he maintained was to bring together "for the benefit of the art-loving people of his country" a collection of arms and armor which in its scope and quality would rank with European national collections. To this end he labored zealously. He traveled extensively in Germany, Italy, France, and Spain, and made remarkable "finds." He knew what had been secured by the early collectors, and, awaiting his opportunity, he gathered from them, sooner or later, the pieces he coveted. In fact, the history of his objects is the history of the great collectors, such as Uboldo, Meyrick, Fontaine, Carrand père, Spitzer, Pourtalès, von Leyden, Magniac, de Cosson, Belleval. Not infrequently his treasures could be traced to national collections. Mr. Riggs's patient watchfulness brought him many historical pieces, and he did not allow them to slip through his fingers when once captured. His work went on so quietly that few, even amateurs, realized the value of the collection which he was bringing together. For one thing, he permitted very few people to see it; and in later years, when accessions were made they were apt merely to be stored away in his home in rue Murillo, which came finally to be so filled with packing cases that the owner himself could hardly find access to his purchases. Only when the first international exhibition took place in Paris did the art world realize what the retiring American amateur had accomplished—for he then permitted some of his most important pieces to be placed on public view.

About 1910, Mr. Riggs decided that The Metro-

politan Museum of Art should become the permanent home of his collection; he had consulted Mr. Morgan and Vice-President Stuyvesant about the conditions in the Museum, and he was influenced in making his choice by the fact that Mr. Morgan, his life-long friend, was the President of the Museum. He accordingly placed the matter in Mr. Morgan's hands, and at the latter's suggestion the Trustees arranged to exhibit the Riggs objects in the three present galleries. They were completed in 1913, and were approved in person by Mr. Riggs, who then visited his native city for the first time in forty-four years. Thereafter, within a few months, the collection was packed and shipped, the contents of a hundred odd cases arriving at the Museum without mishap. As a further instance of Mr. Riggs's generous attitude, we need only mention that he insisted that his collection should not be kept distinct from objects of similar nature in the Museum, and he expressed the wish that the arrangement of the arms and armor should be chronological, since by this means the scientific and artistic interest of the collection could best be demonstrated to the general visitor.

SYNOPSIS OF THE MUSEUM COLLECTION OF ARMS AND ARMOR

The European objects comprise twenty-nine hundred numbers, the Japanese sixteen hundred, other Oriental objects one hundred. There are in round numbers one hundred suits and half-suits of European armor and fifty of Japanese; seventy specimens



PLATE VII

FRANKISH SOLDIER, IX CENTURY

AFTER GIMBEL

SEE PAGE 33

of European mail; sixty European banners and forty Japanese; six hundred European pole-arms and sixty Japanese. The European material includes further ninety spurs, one hundred and ten daggers, forty guns, one hundred pistols, four hundred and fifty swords, eighty shields, two hundred helmets, two hundred and ten other pieces of armor, eighty maces, one hundred and seventy horse trappings, embracing bridles, bits, and stirrups.

III

EARLIEST ARMS AND ARMOR

NO attempt has yet been made to represent in the present collection the typical arms of the Stone Age. From various specimens shown, however, it will be seen that the art of the maker of arms had already made important strides in the earliest times. Stone axes, daggers, knives, and arrow-points, which are certainly more than five thousand years old, were fashioned with no little skill. Especially to be noted are the daggers and swords shown in the Egyptian room (D 3), which date from the predynastic period (about 3500 B. C.). At this time, a degree of refinement in the chipping of flint had been attained which marks probably the highest point in the development of the art. (Plate I.)

It may be remarked that the arms in chipped stone which appeared in various countries, and even continents, are often curiously alike. In many instances, objects of the same shape and treatment can hardly be distinguished, although from widely separate localities and of very different ages. It is probably in certain of these instances that the degree of skill shown in a definite locality was developed in an in-



PLATE VIII

NORMAN AND SAXON ARMOR, LATE XI CENTURY, AFTER BAYEUX "TAPESTRY"

SEE PAGE 36

dependent way, that is, as an instance of what the biologist would call "parallelism." Thus the skill developed in Japan in the making of chipped arrow-points or axe-heads (celts) was in all likelihood a purely local development, i. e., unrelated to that developed in Denmark or in North America. Especially in arrow-points, curious and highly specialized forms paralleled one another in widely separated places. And this is the more remarkable since some of these forms must have severely tested the skill of the artist who made them. There is perhaps no way of appreciating more clearly the difficulty of preparing such objects than by attempting to copy one in a similar material, aided even with modern means for holding the object and for chipping it. It is even doubtful whether some of the highly ornamented flint or obsidian arrow-points, made by a "savage" more than four thousand years ago, could be copied accurately at the present day.

Whether armor was employed earlier than the age of bronze is not definitely known. By analogy, however, it is more than probable that some types of defensive arms were already in use. We may safely conclude that shields were carried, and it is probable, judging from our knowledge of the cultural conditions of primitive peoples, that forms of armor had been developed, fashioned either of fibres or of hides.

IV

ARMS AND ARMOR OF THE BRONZE AGE AND CLASSICAL ANTIQUITY

FOR about six thousand years, man has been a worker in metals. He made his earliest implements and arms in copper, either pure or alloyed—this at least is the commonly accepted view. Some investigators, however, maintain that he worked in iron, to a limited degree, at about the same time. And this view has in general no technical objection to it; for iron is readily reduced from a rich ore in malleable lumps, as distinguished from "cast" iron (which has been in use only about three hundred years). This view, it may be mentioned, is based upon reported discoveries in Egypt. Here, the date of the appearance of bronze can be established with reasonable accuracy, e. g., in the finds of Mêdûm, dating about 3700 B. C. In China, it may have been in use earlier still, if we are willing to accept definite limits in far-eastern chronology.

There is certainly strong documentary evidence to show that bronze was in general use earlier than iron. Thus the Greek classics refer repeatedly to the widespread use of bronze and to the late appearance of



PLATE IX

BANDED MAIL WITH SHOULDER SHIELD, 1274

AFTER GAY

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iron. We know, too, that objects used for religious or tribal ceremonies, whether in Rome, Egypt, Siberia, or Japan, were of bronze, rather than iron, and that such objects, on many grounds, were primitive. We find, further, that bronze implements and weapons occur in older burials, and that iron objects, when they begin to appear, assume shapes which had been developed in bronze only in later times.

We cannot assume, however, that a bronze age was universal or even developed at the same time in widely separated countries. Each continent or country shows wide variations. In northern Europe, where this age has been carefully studied, bronze appeared about 2000 B. C., and its use for arms and armor was continued well into the time of the Roman Empire, centuries after iron was generally employed. There were clearly reasons for this conservatism in the use of bronze: copper, pure or alloyed, was more easily handled than iron, it was splendidly malleable, it could be developed with less labor into plates and points, it did not rust, and it was sufficiently hard for its purpose. Few, indeed, realize today how hard copper may be made. It cannot be "tempered" like steel, but if hammered, its fibre becomes compact, so that a bit of soft copper may be pounded into a point which will penetrate almost as well as iron. I recall seeing the first director of this Museum demonstrate the hardness of a Cypriote lance-blade (which was nearly pure copper) by driving it into the oak floor of the gallery—the point when drawn out was found almost uninjured. But

the hardening of copper was mainly due to alloys. Thus it was found that certain ores which were impure, e. g., those which we now know contain arsenic or antimony, furnished a more durable "copper." It was also early discovered that a slight admixture of tin produced arms which were of excellent quality. This result was probably the outcome of a local experiment in using a copper ore which happened to be rich in tin, say to the degree of two per cent. From this stage an experimental evolution proceeded until a bronze was produced which contained tin to the amount of about ten per cent.

Some of the earliest European arms were prepared with no little skill, and from various points of view, technical and artistic. Some were hammered out of the metal direct, others were cast and then finished with hammer, file, and chisel; many show beautiful outlines and ornaments. Lance-heads with subelliptical blades, arrow-heads with broad points, leaf-shaped sword-blades, and various forms of axe-heads (celts and palstaves, which were narrow celts furnished with a socket into which the handle fitted) (D 12) date from 2,000 B. C. to about 600 B. C.

By far the most interesting of the earliest objects in the Museum is the Babylonian sword presented in 1911 by J. Pierpont Morgan (D 12). This is probably the oldest arm extant which is inscribed in such a way that it can be given a date. It bears cuneiform characters, which state that it belonged to the "Son of Budil, King of Assyria," who flourished in the fourteenth century B. C. (Plate I.)



PLATE X

COMPLETE CHAIN-MAIL, LATE XIII CENTURY
(BRASS OF SIR JOHN D'AUBERNOUN)
AFTER HEWITT

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Among earliest types we should mention the arms of the so-called Minoan period, dating from 1600–1500 B. C., of which reproductions are exhibited in the Cretan Room (H 4). The daggers and swords are straight and massive, beautifully mounted, with ivory grips and golden guards and pommels. They suggest Egyptian objects of earlier age shown in Addition E, 3.

The oldest armor with which we are acquainted consists of *jaẓerans*, or jackets covered with scales. Of these, however, only the detached bronze scales are preserved, and it may be noted these are curiously similar in shape and size, in various and widely separated countries. Thus the same type of bronze scales (often gilded) is found in Egypt (Addition H, 1), Spain, India, China, Japan (H 6, Case 1), and the regions of the Euphrates and Danube. With this body armor appear bronze helmets which exhibit a modeling of no mean order; some are fashioned in a single piece, others are made up of plates which overlap and are riveted together. In some instances these defenses continued to be worn when iron was already in general use.

The first European iron objects date between 850 and 400 B. C. This we know from the burials in the famous cemetery at Hallstatt in the region of Innsbruck in Austria, where the finds have been studied with great care. In graves in this locality iron sword-blades, spear-heads, and arrow-points appear side by side with bronze armor and arms, showing that for a considerable period the armorer used

both metals. From this epoch of transition date many important specimens in the Bronze Room (Addition D, 12). (Plate II.) Foremost among these is the bronze chariot (biga) acquired by the Museum in 1903. This was discovered in fragments in a tomb near Monteleone di Spoleto in Umbria. Its front and sides are encased in beautifully embossed bronze, showing on the front panel archaic figures in whose hands are an elaborately embossed shield and a casque of "Corinthian" pattern. (Plate III.)

Other bronze objects which date from the "Hallstatt period" include a bronze corselet, Greek, dating probably from the fourth century B. C., also several bronze casques shown in the same case. Of these, the rarest is undoubtedly the Italic head-piece with a triangular median crest ornamented with lines of embossed dots and circles. (Plate II.) Casques of this type are known in about fifteen examples and are described by Freiherr von Lipperheide in his Corpus Cassidum, Berlin, 1902. Associated with this head-piece is a corselet of the same type, dating probably from 700 B. C. (Plate II.) The present example is figured in Forrer's dictionary of archaeology and has been several times exhibited, notably in the military exhibition of Strassburg about 1905. In referring to this object, we should mention the discovery in Fillinges in the Haute Savoie which took place several years ago, when a hoard of five or more breastplates of this type and one backplate were found lying together like a pile of broken shells. The backplate is here exhibited. Additional objects of







PLATE XI

HUNTING (OR WAR) HORNS
XI, XII, AND XV CENTURIES
DE DINO AND MORGAN COLLECTIONS

SEE PAGE 40

this period in the present collection include several gracefully modeled greaves, sixth or fifth century; a belt, Etruscan, fourth century B. C. from the ruins of Bitulinia; shield bosses, dating from the seventh century (?); together with a series of spear-heads, swords, and daggers. Of the latter, one retains its bronze sheath. In all these arms, it may be mentioned, the workmanship is excellent. The designs have been traced free-hand, but accurately, and no little artistic judgment is shown in execution. In this regard, one recalls the "Casque of Hannibal," an Etruscan head-piece, which is now preserved in the museum of Perugia. This object ranks with the best of armor, whether ancient or mediaeval.

The beautiful arms of Greek, or broadly, Italiote workmanship of the sixth and fifth centuries B. C., are a legitimate product of this splendid period. Their makers were artists whose position in the community appears to have been quite equal to that of the designers of vases or buildings, and in their pride in their work, they sometimes carefully signed their pieces. It is only to be deplored that the works of these early armorers are now so rare. The casque in Perugia, and fragments in the museums in Athens, Naples, Paris, or Berlin, are at least enough to show the degree of taste, one is tempted to say perfection, which the art of the armorer had then attained.

In spite of the lack of many objects for study, the equipment in Greek times is adequately known. Contemporary paintings, coins, and sculpture yield details which are in all probability accurate. Figures

in armor were favorite themes of vase painters and from their works we may classify corselets and casques, swords, bows, quivers, lances, war-axes. (Plate IV.) The helm, close-fitting, fashioned from a single piece, protecting not only the cranium but the nose, cheeks, and chin (Corinthian form), was an excellent test of the armorer's skill, and such an object (Addition D, 12) well repays careful examination. It was so made that the metal was thickest at exposed parts: then, too, rims were reinforced, and there were apt to be ornamental borders and well-planned ridges which strengthen the surfaces and at the same time provide attractive lights and shades. Corselets were of numerous types, the most highly specialized having been modeled closely to the muscles of the chest. The abdomen was little protected, also the sword arm. The legs, on the other hand, were furnished with tall greaves and, rarely, thigh defenses, or *cuissards* (see Plate IV). A huge shield was the major defense.

Altogether, the panoply was designed to hamper as little as possible the movements of the wearer. And if a modern, or, still better, a mediaeval soldier could have observed the individual attacks at Marathon or Plataea, he would probably have been dumbfounded at the suddenness of the charges, the rapidity of the thrusts, and the quickness with which the heavily armored Greek dropped to his knee, rose, or feinted. I have seen no comment upon the supreme activity of the Greek soldier in battle, but his armor gives the clearest proof that he specialized his equip-



PLATE XII

"IVORY" SADDLES, XIV, XV, AND XVII CENTURIES
DE DINO COLLECTION

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ment in this functional direction. There was no reason why he should not have worn more complete armor, and if he did not protect his abdomen and thighs it was because he wished to keep unhampered his movements in running, leaping, twisting, bending, and stooping. Note, for example, the details of his greave: its ends show that it was formed so as to restrict as little as possible the varied movements of knee and ankle. That his sword arm was bare showed that he would not embarrass it even with the weight of a leathern sleeve; for to retard the movement of his arm the fraction of a second might cost him a fatal wound. The use of the shield does not mean, indeed, that it was unnecessary for the soldier to protect otherwise the abdomen and thighs: certainly his sword arm was exposed, yet was unprotected, and his corselet fitted too closely the lower ribs and marked out too accurately the limits of the muscles which function in stooping, to have been developed as a mere accident. In fact, even when armor of the thighs is present it is of a special form so as to hinder little their activity.

This line of development in armor, i. e., allowing a maximum of the wearer's active movements, seems to have been followed for a considerable period, for we have numerous documents tracing its changes during the last centuries before Christ and during the early centuries of the Roman Empire. The soldier of Rome (Plate V) was provided with armor which was suited for long marches and active movements. The flexible corselet and shoulder defenses, or span-

drels, were admirably designed to these ends. They were formed of bands of iron, articulating by means of leather straps, and were probably a modified form of the earlier jazeran—which was still occasionally used—in which the horizontal rows of scales became transformed into bands. This enabled the wearer to discard the underlying jacket and to substitute a stronger corselet at less outlay. For the study of the arms and armor from about the year 400 B. C. to the time of Augustus Caesar many important finds have been made in the Swiss lake deposits. At La Tène (near Neufchâtel) so complete is the series of these remains that one can give relative dates to various forms of iron swords, spear-points, and other weapons. And it is found, in the most interesting way, that these comparisons hold good for arms found throughout Europe generally.

We have few objects to illustrate the work of the artists of La Tène times, nor yet of Imperial Rome. In the Bronze Room there is, however, an excellent horse frontal, beautifully incised, which dates probably from the second division of La Tène times (250–150 B. C.), and there are also several helmets and a few arms. Our knowledge of the armor of the Roman Empire is based largely upon contemporary sculptures, portrait statues, and especially upon the reliefs given in wealth of detail on Trajan's column (A. D. 114). Here appear not only Roman officers, legionaries, and their train, but barbarians in full panoply. The latter show that highly ornamented arms were sometimes carried, that scale- and chain-armor were





PLATE XIII

CHESS FIGURE, ABOUT 1350
MARBLE RELIEF, ABOUT 1300

SEE PAGES 41, 43

in frequent use, that their horses were sometimes armored, even to the fetlocks. Here, too, the famous Roman short sword is pictured, but, curiously enough, the *pilum* is not represented. This was a long-necked spear which could be driven through a shield and passing its full length, transfix several enemies—breaking the virtue of the close-set mass of soldiers, or "phalanx," which had played so important a part in earlier wars.

The best actual specimens of the armor of this age are preserved in the Naples museum, which exhibits the remarkable finds from Pompeii and Herculaneum (A. D. 79), including objects engraved, gilded, and embossed. Of the last type is the famous visor of a helmet in the form of a face which was found in England (Rochester) and is now preserved in the British Museum. Its workmanship suggests the hand of a Roman Negroli!

V

THE EARLY CENTURIES OF THE CHRISTIAN ERA

WITH the breaking down of the Roman Empire new styles of arms and armor were developed, and new methods in warfare were introduced. Roman fashions were rejected or could not be reproduced. The types of arms that then came into being suggest in details Oriental influence. Scaled corselets (jazerans) appeared more abundantly, shields developed larger bosses, and swords became again long and narrow, but straight-edged, not leaf-shaped as in early Gallic times. Axes appeared in such numbers that they are spoken of as the national weapons of the tribes which swept into the Roman Empire over the German and Dacian frontiers. Specimens of these arms date usually from the fourth to the eighth century A. D. They are shown in numerous examples in Case 1 in the present main hall—a remarkable series which forms by no means an unimportant part of the J. Pierpont Morgan Collection. They were originally brought together by Stanislas Baron, who for many years explored the Frankish cemeteries in the neighborhood

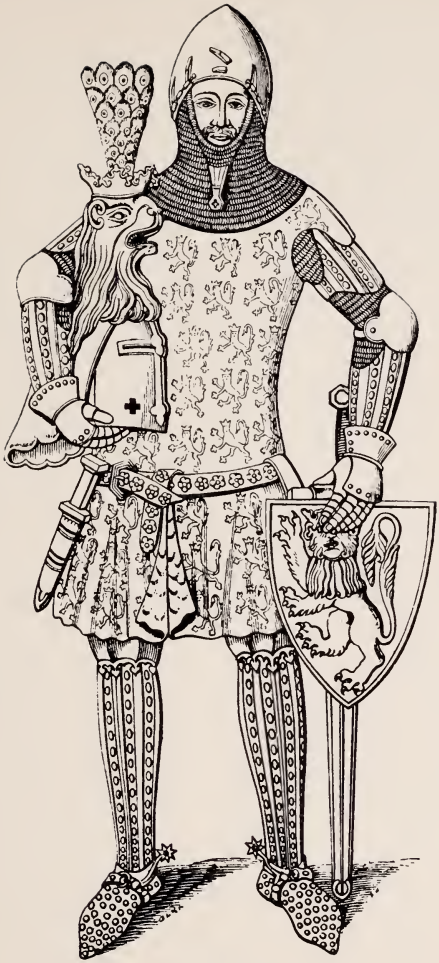


PLATE XIV

TRANSITIONAL ARMOR OF GUENTHER VON SCHWARZBURG, 1350, AFTER HEWITT

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of Vermant, Belgium. They include a number of splendid swords, one of which has its hilt enriched with gold and garnets; a shield boss of unusual size entirely incrusted with gold; numerous axe-heads and spear-points; daggers of peculiar form, or *scramasax*, which in several specimens preserve their scabbards.

The warrior of the sixth or seventh century (Plate VI) was often far less completely armored than the Roman legionary: he had no metal corselet, a jacket of hide protecting his body, and he had no defenses for face or neck. On the other hand, his arms and legs were protected in a measure, and his lower legs were closely wrapped with a kind of puttee. His major defense was his *Spangenhelm*, or conical casque made up of many pieces, and his great shield, which was wooden, covered with leather, and reinforced with iron—the latter in the form of a central boss and radiating and concentric bands. His equipment, although primitive to a certain degree, bore sometimes, as the present specimens show, rich ornaments. Buckles, hooks, hilts, scabbards, bands of casques, are sometimes engraved and gilded, or beautifully inlaid with precious metals in close-set Merovingian strapwork (Addition F, 2).

The supreme development of early Teutonic armor may be seen (Plate VII) in the equipment of a Frankish warrior of the time of Charlemagne (early ninth century). Here the jacket of hide has been replaced by a jazeran, or coat of scales (see the specimen in Case 15, which dates, however, from the fifteenth century) on which the scales, whether of metal

or boiled leather, are sewed in place. The helmet is fuller and deeper, protecting the face by its flaring rim: attached to it is a hood, of leather or mail, to protect the neck and face. In offensive arms the pilum-shaped dart has given place to a stout lance, finished with a long, leaf-shaped head, reinforced by basal prongs (Case 2).

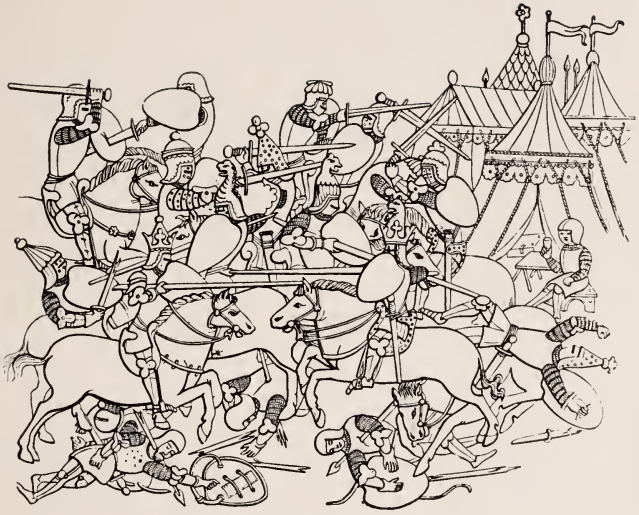


PLATE XV

ARMOR TRANSITIONAL FROM CHAIN TO PLATE, 1360
AFTER HEWITT, FROM MS. "MELIADUS"

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VI

CHAIN-MAIL AND MEDIAEVAL ARMOR

A FAIRLY distinct period in the history of European armor is marked by the development of chain-mail. This was flexible, light, and extremely strong. It came, therefore, to supplant the cruder defenses of Carolingian times. It was largely in use from the tenth century onward, but became a secondary defense about 1300. In general, this type of armor is believed to have been introduced into Europe from the Orient, where its use survived until recent times—and where it may still survive. In the Caucasus, for example, coats of chain were worn recently, and in Thibet within about ten years a British expedition found native soldiers in shirts of riveted mail. It was early held that European mail was introduced from the East during the Crusades. But it is now known that the people of northern Europe wore mail at an early period. The Norse records speak of primitive hauberks as "warnets woven by the smith hand locked and riveted," and fragments of these have been found in Viking burials. This mail, it is true, may have come from the East, for we know that the Norsemen carried

their excursions far into the Mediterranean and were well acquainted with Oriental objects. In this connection, one recalls the peacock feathers—which came probably from India—which were found in one of the Viking boats now preserved in the University of Christiania. On the other hand, it is probable that chain-mail was more or less continuously used in Europe since Roman times, for the sculptures on Trajan's column (A. D. 114) demonstrate that the *lorica catenata* was quite similar to mediaeval mail.

Specimens of mail which undoubtedly date between the earliest times and the fourteenth century are almost unknown in collections. Even fragments of it are very rare; for mail, presenting in each link so large a surface for rusting, has in the course of centuries melted away. Our knowledge of early mail has therefore been based upon contemporary illustrations, notably illuminated miniatures and gravestone figures.

The mail of the eleventh century is pictured in detail in the embroidery of Bayeux. (Plate VIII.) From this wonderful "document" we know that several types of ring mail were already in use. A prevailing form was fashioned of heavy iron rings which appear to have been sewed in bands upon a heavily padded garment: this padding, by the way, was always of the utmost value in this type of defense; for chain-mail, while preventing a point or edge entering it, was flexible and did not guard against a crushing blow, as of a mace or war-axe. There are no actual specimens of the mail of this period, but we



PLATE XVI

EARLY PLATE-ARMOR, 1401

AFTER BRASS OF SIR NICHOLAS DAGWORTH

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conclude that the rings were heavy and large: we know that the hauberks were long and complete, enveloping the head and extending to or below the knees. The head-piece was a conical helmet made of several plates riveted together and provided with a heavy nose guard (see Case 1). A further defense was a long, kite-shaped shield which usually retained its median boss, recalling, in fact, the shields of earlier ages. Offensive arms of this period include the war-axe (Cases 1, 18), which now is provided with a long handle and is wielded by two hands; a large, long-bladed, two-edged sword; darts or javelins; and various forms of arrows and bows.

Complete suits of chain-mail date from the twelfth century and were the characteristic armor of the early Crusades. Examples of this type, but of slightly later date, are pictured in Plates IX and X. One of these shows the long-discussed "banded" mail which sometimes dates as early as 1200. In this the bands appear to have been produced in different ways: in one of them thongs of leather were passed through successive rows of links. We know that at one time the mail covering the feet was included with the leg covering, and that a hood and mittened sleeves were continuous with the skirt. During this period, the head-piece was a broad iron cap, or primitive basinet. Over the body was worn a cloth surcoat, which hung loosely from the shoulders and was drawn together at the waist by a knightly girdle. It bore heraldic devices, which were also blazoned on a short triangular shield (Case 18) carried slung from

the shoulders. It has been observed that the shield became reduced in size as the efficiency of the mail increased. About the end of the thirteenth century supplemental shields, also with heraldic ornament, appeared in curious plates, or *ailettes*, which were laced to each shoulder. (Plate IX.) They were so attached that when struck they tilted over and deflected the blow. They are characteristic of a period of about half a century. No actual example of a European ailette appears to have been preserved. In Japanese armor, on the other hand, an ailette-like defense, the *sodê*, was retained for over a thousand years.

Advances in the offensive arms of this period include the lengthening of the sword, which now tapers from hilt to tip, and the more constant appearance of the lance.

Horse armor is not pictured in the Bayeux "tapestry." It appears, however, occasionally during the late thirteenth century. It was then a blanket-like housing of chain-mail.

In the present collection there are few objects dating from the earlier period of chain-mail. The oldest hauberks in the collection, shown in Cases 11, 12, 14, certainly do not antedate the fourteenth century, and, with few exceptions, were worn under complete armor or as supplemental defenses. With these are exhibited coiffes of chain-mail which probably date from the first half of the fourteenth century, and leggings of mail, also of this century. In other cases (Cases 2 and 4) are mail neck-defenses, *camail*,

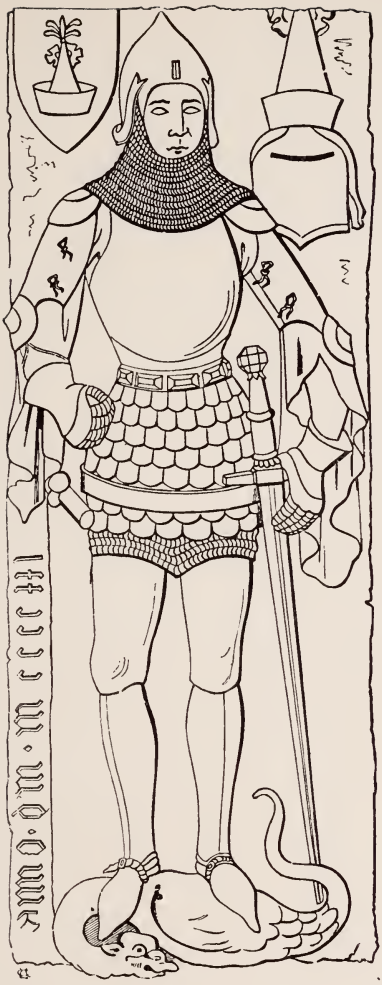


PLATE XVII

PLATE-ARMOR, 1421
AFTER AN EFFIGY OF A KNIGHT OF THE
FAMILY OF HABERKORN

SEE PAGE 48

also *brayettes* or groin defenses (fifteenth century?) (Case 2). There are also head-coverings which are made of coiled rope (probably fourteenth century) and were worn under caps of chain-mail (Cases 12, 13).

In many instances the mail itself is beautifully fashioned. Each link is carefully closed and riveted. Numerous examples of "double" mail are shown. This was rarely formed of doubled links, but was closely woven or reinforced, each link attached to six neighboring rings, instead of four, as in the usual mail (Cases 2, 13). Mail, it may be remarked, is one of the few objects which *faussaires* fail to reproduce, for a copy of a shirt of mail with labor at modern prices would be apt to cost more than an original object. Each link of the shirt is made separately, and one may understand what labor this would involve when he considers that in a single hauberk in the present collection there are upward of two hundred thousand rings, which probably cost its maker years of unremitting work. The collector's embarrassment in dealing with chain-mail is not in avoiding modern copies, but rather in learning to distinguish European from Oriental mail, which is far less valuable; for while European mail was rarely made after 1600, the Oriental armorers produced large quantities of chain shirts during the seventeenth and eighteenth centuries. Only in the technical details do these differ from German or Italian examples.

Dating from the chain-mail "period," the collection shows numerous trappings (Case 16). Prick

spurs are here and early spurs with rowels, including a splendid specimen, engraved and gilded, bearing the arms of the de Dreux family. Here, too, are numbers of armorial pendants (Case 8). These are of various shapes and sizes and were attached to mail or to horse trappings in various ways. Some were "badges of recognition," worn by heralds or messengers. Others seem to have been strung along the lower rim of a horse's chest-strap, or *peytrel*. Others still were parts of stirrups or even spurs (see the splendid example in Case 8). These objects are frequently ornamented with enamels, fashioned elaborately, and beautiful in their blazonry. They date from the eleventh to the sixteenth century, the majority, however, probably from the fourteenth century. Many of the specimens are Spanish. The present series formed an important part of the de Dino Collection.

Near the case of armorial pendants are two ivory hunting (or war) horns (Case 6) which merit careful inspection. (Plate XI.) The larger one is an *olifant* from the Benedictine abbey at Dijon; it dates from the twelfth (?) century, and is accompanied with a leather case which was prepared for it in the fifteenth century. It may well have had an Oriental origin, possibly Persian, its deeply incised medallions picturing lions, antelopes, elephants, and a turbaned figure. The smaller specimen is earlier; it is probably from northern Europe. Other olifants, including a fragment which suggests our larger specimen, may be seen in the Morgan Collection. In Case 16 note also



PLATE XVIII

GOTHIC ARMOR, ABOUT 1435
AFTER THE BRASS OF ROGER ELMBRYGGE

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the ivory hilt of a dagger carved elaborately *à jour*; it is Venetian, thirteenth century.

These ivory objects suggest the "ivory saddles" shown in Cases 7 and 9, although they are not so old as the olifants here considered, nor are they really of ivory. They are early, none the less, and are among the rarest objects in the collection. (Plate XII.) The smaller saddle is German, dating 1400 or earlier; the other is Italian, about 1450: both are wooden, veneered with plates of bone which have been sculptured and polychromed. From the standpoint of early ornament these objects are of the highest interest. Few museums possess them: the most closely related examples are in the imperial historical museum in Vienna and in the Wallace Collection in London.

As a final illustration of the equipment of this period, one should examine the small equestrian figure (Plate XIII) which came from Poblet, probably from the tomb of King James the Wise of Aragon, who died in 1276 (see Bulletin of the Metropolitan Museum of Art, August, 1913, pp. 171–173): this is now exhibited in Addition F, 1.

VII

THE PERIOD OF TRANSITION FROM CHAIN-MAIL TO PLATE-ARMOR

DURING the period from 1200 to 1400, there were notable improvements in military equipment. In one regard, chain-mail came to be reinforced with bands or plates of steel which guarded the wearer from the shock of blows. In early examples, suits of chain were reinforced with an occasional plate, e. g., a knee- or elbow-guard, or a face-plate attached more or less loosely to the head-piece. These supplementary pieces were sometimes of iron, often, however, of leather hardened by boiling. Of the latter material were probably the supplemental defenses of Guenther von Schwarzburg, King of the Romans (about 1350), which are represented in his tomb-effigy. Here (Plate XIV) only the bands, ornaments, and head defense appear to have been metal. Another line of improvement concerned the defensive armor of the head. The casque, or *basinet*, was closely modeled to the head of a wearer and it had laced to it a *camail*, or wide collar of chain-mail. At this period, the basinet had sometimes fitted over it, but separated by heavy padding,

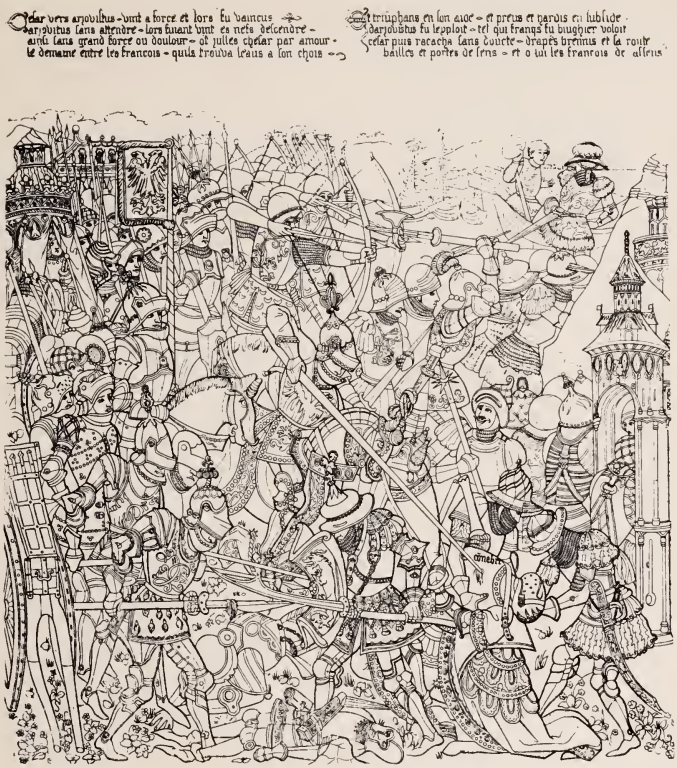


PLATE XIX

ARMOR OF 1450

FROM ONE OF THE CAESAR TAPESTRIES (BERN)

AFTER JUBINAL

SEE PAGE 50

a second helmet, a thimble-shaped *beaume*. This, together with surcoat and shield, bore heraldic devices. From this period, say 1350, dates the interesting little chess figure, illustrated by Hewitt in his work on armor. The original of this has, it appears, been lost, but a copy in plaster had been preserved and this is shown in Case 6, giving an excellent idea of the military equipment of the time. (Plate XIII.) In this chessman, which is probably English, the housing of the horse is of chain-mail, and came down to its fetlocks, in spite of Hewitt's picture; for the cast shows that the little horse was slid along the chess-board on an elliptical base and never had longer legs. The head of the horse is completely enclosed in a case which from its size and construction was probably of boiled leather. The cavalier has leg defenses of metal or of hardened leather and he bears on his arm a small shield. (Compare also the armor shown in Plate XV.)

Actual examples of armor of the transitional period are extremely rare. The present collection is, however, rich in its series. It has important basinets (Cases 1, 2, 10, 16), some with their curious visors "pig-faced" or "dog-faced." It has also leg defenses which show the traces of stuff (canvas, covered with silk?) with which they were originally covered (shown mounted in Case 14), and several pieces of boiled leather defenses for knees or elbows (fourteenth century) (Case 2). The last were lately discovered in a grotto in the neighborhood of Bordeaux and are believed to be the only specimens of the kind

extant. In the same case is a gauntlet dating from 1380, together with an elbow and upper arm defense. There are also pieces of chain-armor, including camail. Other objects include spurs, swords, axes, and daggers. (Cases 2, 16, and 18.)

It was in this period that fire-arms were first used in European warfare. They appear in the siege of Algeciras in 1341 and of Calais in 1346. They were cannon which when small were usually funnel-shaped, or when large, fashioned like barrels out of iron staves and hoops. At the best, they were crudely made, often by local armorers and blacksmiths. Instead of cannon balls, stones were used, which of course had little penetrating power, especially with the imperfect powder of the time. Still, the advantage of this type of arm was soon realized, and many victories were gained through the breaches in city walls made by these early *pierriers* and *bombards*. Within a century, artillery became a vital part of large armies. Constantinople was taken by means of cannon, and the losses of the Moors in Spain were due in no little part to the operations of the Spanish and Italian artillerymen. A cannon of the earliest type, *pierrier*, is shown in the present collection near Case 15 (wooden stand and iron mountings modern), and one of somewhat later date, *falconet*, near Case 21 (stand and mountings also modern).

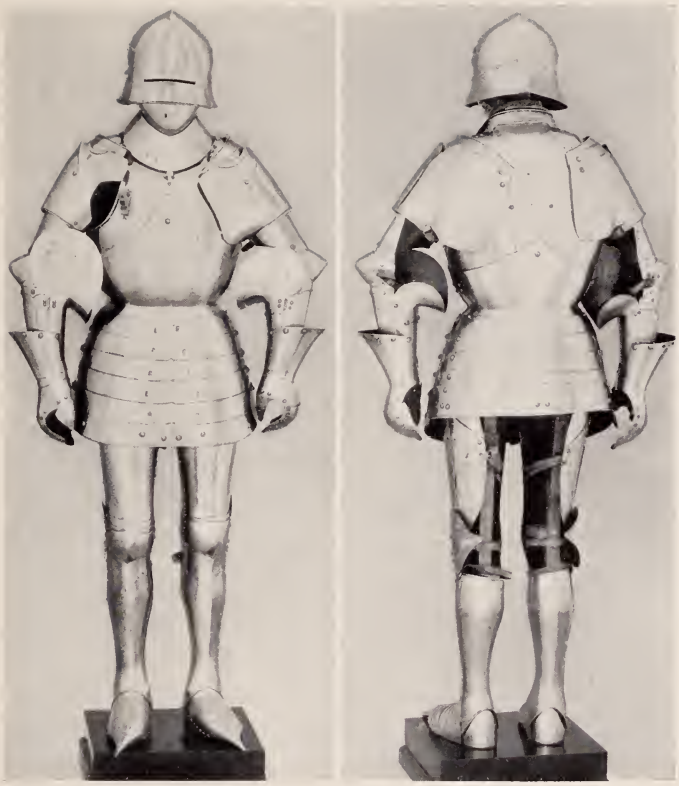


PLATE XX

GOTHIC ARMOR, ITALIAN, ABOUT 1460

DE DINO COLLECTION

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VIII

THE PERIOD OF PLATE-ARMOR AND OF FIRE-ARMS (1400–1780)

COMPLETE armor of plate was in use at the beginning of the fifteenth century, and it was during this time, as already noted, that the armorer produced his best work. Already in the sixteenth century, his art began to decline, and the supreme examples of a later period are important as illustrating the work rather of the goldsmith than of the armorer. In the seventeenth century complete armor disappeared, for at this time, owing to the perfection and widespread use of fire-arms, the soldier found that the great weight of his armor, which indeed made it almost unbearable, did not compensate him for the imperfect protection it offered. So it came about, during the time of the Thirty Years' War, which ended in the middle of the seventeenth century, that armor was discarded piece by piece. In the eighteenth century it was used only as a ceremonial costume for the highest officers.

Under this heading, we may trace the development of arms and armor chronologically.

A. ARMOR OF THE FIFTEENTH CENTURY

This is the "Gothic" armor—beautiful in its lines, elegantly fitted, its parts articulating with great precision—which appeals alike to artist and collector. It appeared in the Wars of the Roses, in the Burgundian defeats; it was pictured by Dürer, Van Eyck, and Carpaccio; it is the armor of the time of Joan of Arc, of Louis XI, of the fall of Constantinople, of the conquest of the Spanish Moors, and of the Italian wars of the Renaissance. Early examples are present only in "compositions" in which pieces of armor from different suits are brought together, as in Case 4, which shows a suit made up of separate elements, many of which date between 1380 and 1420. There exist no harnesses, even fairly complete, dating earlier than 1460. And of this period they are known only in the museums of Vienna, Bern, and New York. The specimen shown in Case 25, although somewhat "made up," will probably be ranked by connoisseurs as the most important harness in the present collection. (Shown in Plate XX.) It is of Italian workmanship and bears the mark of its maker on many of its plates. Evidences of its early period are seen in its well-rounded breastplate with its high *pansière*, in its huge shoulder pieces, in the broad guards (*épaule de mouton*) which defend the elbows, in the broad bands of the skirt, and in the wide-cuffed mitten-gauntlets which open broadly on the under side of the wrist. A suit of the same early period is also shown mounted as an equestrian figure (*E. 3*) in the central gallery. This, however, is distinctly

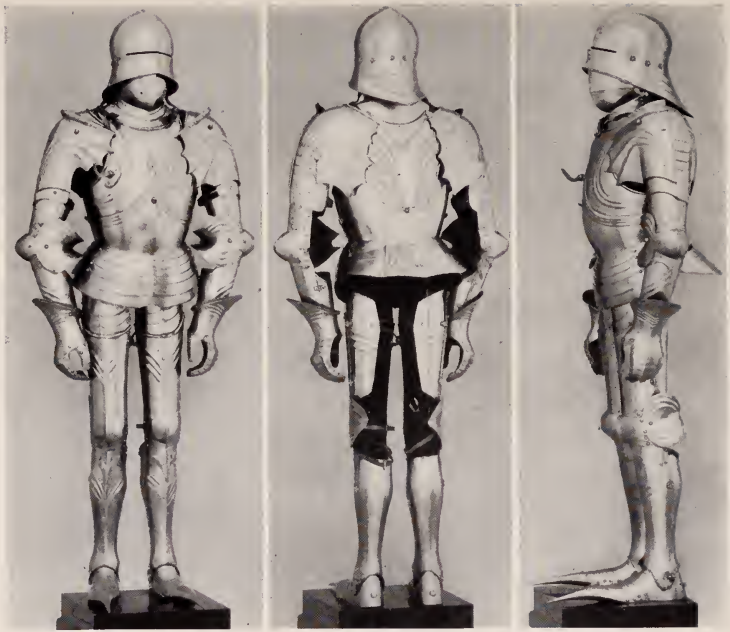


PLATE XXI

GOTHIC ARMOR, ABOUT 1470

STUYVESANT COLLECTION

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a composition, though a number of its pieces were made in Milan by the same family of artist-armorers, the Missaglia, whose proof-marks are borne on various parts of the suit. Breastplate, one gauntlet, casque, face guard, most of the arm pieces, and the great knee guard date about 1450; the other parts, 1460–1475.

On account of the lack of actual specimens, our knowledge of the arms and armor of the first half of the fifteenth century is derived largely from contemporary paintings, tapestries, and monuments, from which we may sketch briefly the changes which took place in the development of the knight's panoply. From such sources we select for illustration Plates XVI–XIX.

In the monumental brass of Sir Nicholas Dagworth, which dates about 1401, there appears one of the earliest complete harnesses of plate. (Plate XVI.) The basinet is still present with its camail and heaume, on which the head of the present figure is resting. The body armoring has a narrow-waisted cuirass, includes a short coat of mail, and is enclosed in a tight-fitting surcoat. The arms were completely protected by plate. The gauntlets were apparently of boiled leather, reinforced by bands of metal. The leg armoring is complete, the knee defense small and characteristic of this epoch; a supplementary plate reinforces the upper part of the greave; the leg appears to have been encased in stockings reinforced with areas of chain-mail; the shoes, or *sollerets*, were narrow and delicately articulated. The knightly

belt bears the long sword with tapering blade, straight guard or quillons, and a dagger with round guard and pommel (*à rouelle*).

At this point we may introduce an illustration (Plate XVII) showing the panoply of a German knight of later date (1421), if only to call attention to the fact that the development of armor did not progress at an equal pace among European nations; for while the English at this period were introducing many innovations, the Germans were conservative, and the present suit still retains many features of the transitional period. The character of the camail still suggests the mail of the thirteenth century: indeed, the thigh guards, the shoulder and elbow plates, hip defenses, sollerets, and possibly also the gauntlets, appear to have been fashioned, as they were in the preceding century, of cuir-bouilli. And in this connection it may be remarked that the student frequently encounters examples of conservatism; thus it is found that types of armor which became obsolete in western Europe by the middle of the sixteenth century, were still used in the Baltic provinces during the seventeenth century, and, as Mr. Riggs writes, "Some amusing texts tell us of Scottish and Irish chevaliers appearing at the English court pageants during the sixteenth and seventeenth cen-

[1] In Case 10 is shown a basinet dating between 1390 and 1415, which several writers have attributed to Joan of Arc. It is evidently an *ex voto;* for it bears ancient injuries, probably from bolt or arrow, and it was arranged to be hung up by a chain, as were memorial objects. In fact, it is from the particular links of chain which it still bears that the identity of this casque is said to have been established; for they agreed with those in the chain which formerly hung above the main altar of the church



PLATE XXII

GOTHIC ARMOR, ABOUT 1490

DE DINO COLLECTION

SEE PAGES 49, 54

turies, armed with basinets of the fourteenth century and cap-à-pie suits of the fifteenth century."

At a slightly later period, about 1435, roundly the time of Joan of Arc,[1] important changes had taken place in the fashion of armor.

In the tomb brass of Roger Elmbrygge, about 1435 (Plate XVIII), we note that the camail of chain had given place to a chin-piece or beaver of plate, and a neck guard which protected more adequately, although it allowed less freedom of motion; that armpit pieces had appeared to protect the shoulders; that the gauntlets were of plate, simple, however, and mitten-shaped; that the armor of the hip region had become greatly produced; and that no part of the equipment exhibited chain-mail. A heaume was worn, but its value waned; it became less necessary on account of the changes which had taken place in the basinet. By the middle of the century, the heaume was altogether replaced by a visored and beavered basinet.

The second half of the fifteenth century produced great variety in Gothic harnesses, in some of which the simple lines of various plates gave place to elaborate angles and ridges. (Compare Plates XXI and XXII.) In this connection, one should examine the tapestry which hangs at the side of the gallery near the Gothic armor; for by the tapestries of this type

of Saint Jean du Martroi at Orleans and suspended the lost "basinet of the Pucelle." It is certain that the present object is French and, assuming its origin, it may have belonged to Joan. That it dates slightly earlier than the siege of Orleans (1429) is not in itself a fatal objection, although it is certainly an important one, for the leader of a host would hardly have worn a casque of a type which had gone out of fashion.

(see Plate XIX) one might illustrate a monograph on the arms and armor of western Europe between 1450 and 1470. Take, for example, Gothic head-pieces: in the plate cited one sees hat-shaped *chapels-de-fer*, with wide brims; small bowl-shaped *salades* such as archers wore; the knightly salades of the period with heavy and wide visors, sometimes beautifully enriched; also deep-fitting salades or *barbutes* which were modeled around the wearer's face, sometimes to such a degree (as shown in the prostrate figure) as to recall the Corinthian casque (p. 28); and, finally, the visored basinet with neck plates (as shown in the wounded falling knight), which still lingered from the earlier period (see casques in Cases 2, 12, 13, 18, 19, 20). These tapestries, too, illustrate the various forms of cuirasses, cloth-encased armor, padded tunics, and body-armor formed of steel plates riveted together under cloth. They show as well the various forms of swords, lances, war hammers, breakers of chain-mail, and occasionally artillery. They are sometimes painfully realistic, as in the tapestry now exhibited, where prisoners are pictured being put to death barbarously—a horror which may serve as an index of a little-known side of mediaeval warfare, when prisoners who could not pay ransoms were "taken to the rear and piked," or at best sold as slaves.

We have referred above to a kind of corselet made up of steel plates riveted together under cloth. These were called *brigandines* (Plate XXVI), and they are evidently akin to jazerans, which have been earlier



PLATE XXIII

MAXIMILIAN ARMOR À TONNELET, ABOUT 1520

DE DINO COLLECTION

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described. In brigandines, however, as in Case 15, the metal scales were attached to the surface of the jacket instead of to its lining. They appear to have been worn in great numbers, judging from contemporary pictures, and we can understand that they formed flexible and strong defenses, better in many ways than chain-mail. During the fifteenth century, and even later, many varieties of them were developed. Some were built up of small plates or scales which widely overlapped; others were made over bands of iron, like the corselet of the Roman legionary; others still had very few plates in their construction, e. g., two in front and three behind (Case 18).

In general, these brigandines were provided with skirts lined with iron plates and bands. In rare cases they developed arm and leg defenses in the same fashion. But of these we know little save from the evidence of contemporary illustrations. In the present collection (Cases 20, 22, 23, and 24) are shown several brigandines of admirable quality, ranking among the best of their kind. It may, indeed, be remarked that only about twenty more or less complete brigandines (only one of them retaining its arms) are recorded among the collections of Europe. They were objects which were not easy to preserve or to repair, and when tattered, they were early thrown away. One of the brigandines from the Riggs Collection is mounted with metal plates damaskeened and retains both its shoulder pieces and its arms. Another has a pair of arms, but these belonged to a different suit.

As a rule, the earlier Gothic harnesses had not developed flutings or even prominent ridges at the borders of the plates. The later suits were distinguished as having heavy ridges at the upper border of the breastplate and around the armpits. This was especially true in the Italian harnesses dating between 1450 and 1500. These, it should be noted, have ever ranked high among beautiful suits of armor; they were simple in lines, excellent in workmanship, and admirably adapted to the needs of the wearer. A mounted suit in a museum seems ever to have within it a living manikin. A harness of this type is exhibited (as an equestrian figure, *E. 2*) on the east side of the main hall. It is of Milanese workmanship, perhaps from the shops of the Missaglia, who then ranked throughout Europe among the greatest of artist-armorers. The casque is no longer the bowl-shaped salade; it has now become a close-fitting helmet; its chin-pieces are hinged from the side and are locked together by a pivot at the point of the chin. This small helmet, or *armet*, had at its base a collar of chain-mail, and at its back a small round shield, or *rondelle*, on a mushroom-like stalk. This has given the casque its name, *armet à rondelle*, a type which was still in use during the first decades of the sixteenth century, as in the Spanish harness in Case 30. It is best known in Italy and Spain; in Italy it is found at an early period, as early perhaps as 1440, for Italy was then highly advanced in the work of its armorers—in some cases, indeed, over half a century ahead of the fashions in northern Europe. This armet

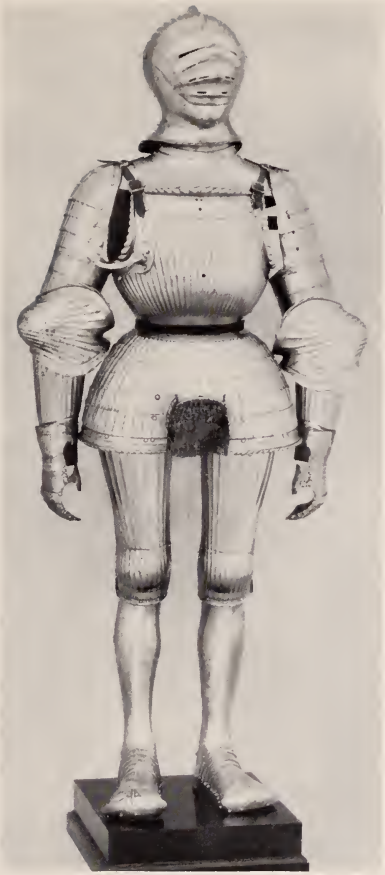


PLATE XXIV

MAXIMILIAN ARMOR, ABOUT 1515

DE DINO COLLECTION

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is regarded by connoisseurs as the most beautiful of all early head-pieces (Case 20).

It may be remarked that helmets of this type, together with salades and armor generally of the same period, are apt to be beautifully executed. The inside is often as interesting as the outside; for it exhibits the hammer marks deeply sunken in the metal, showing with what skill the hard metal was fashioned. Such armor often bears the punch-marked monogram, or even the abbreviated signature of the artist who made it. And with this stamp is usually a key-shaped "proof mark" (Case 18) to certify that the object has been given an official test of strength. This symbol of proof if repeated would signify double or triple proof. The test, it appears, took place at the civic headquarters of the armorers' guild and consisted in striking the object with a bolt shot from a crossbow of standard strength. Sometimes the work would be tested at several points, as in the small armet-à-rondelle (Case 20) made by Thomaso de Missaglia (about 1480), which bears the proof mark in no less than four different places. In those times the value of an object was so directly determined by the practical test that nearly all plates of the same harness might bear the proof mark (Case 25).

Of late Gothic harnesses (i. e., dating from 1470–1490) there are six specimens in the present collection. Four of them appear in separate cases on the east side of the large gallery between the columns. The first of these is a beautiful harness, lent to the Museum by Madame Rutherfurd Stuyvesant (Case

26). It was one of the objects of the Spitzer Collection. In this harness, which dates about 1470, bold ridges and flutings arranged in the order of three appear on different plates. (Plate XXI.) Beyond this (Cases 28 and 29) are two Gothic harnesses from the Riggs Collection, dating from a period relatively late. In this type of armor the ornamental flutings become very numerous, and are always radial in pattern. An admirable harness, Italian, dating about 1490, is exhibited in Case 27 next to the Stuyvesant suit. (Plate XXII.) It is of florid design decorated with many flutings, its borders are closely perforated with trefoils, and its elbow plates are produced as delicate spines. This example, with its beautifully articulated backplate and gauntlets, represents the supreme effort of a Gothic armorer to retain the effectiveness of his style. The work, however, had already become too highly "specialized," and this foreshadowed a decline in the art; for in the work of the armorer a principle seems to hold true which is well known in the evolution of animals: it is that high specializations, such as highly modified kinds of spines or teeth, lead the way for the extinction of a type. According to this principle, a new form would shortly appear which would supplant the old and be again the basis for another line of development.

B. ARMS OF THE FIFTEENTH CENTURY

Before referring, however, to the armor of the next, or Maximilian period, we may briefly review the arms of the fifteenth century.

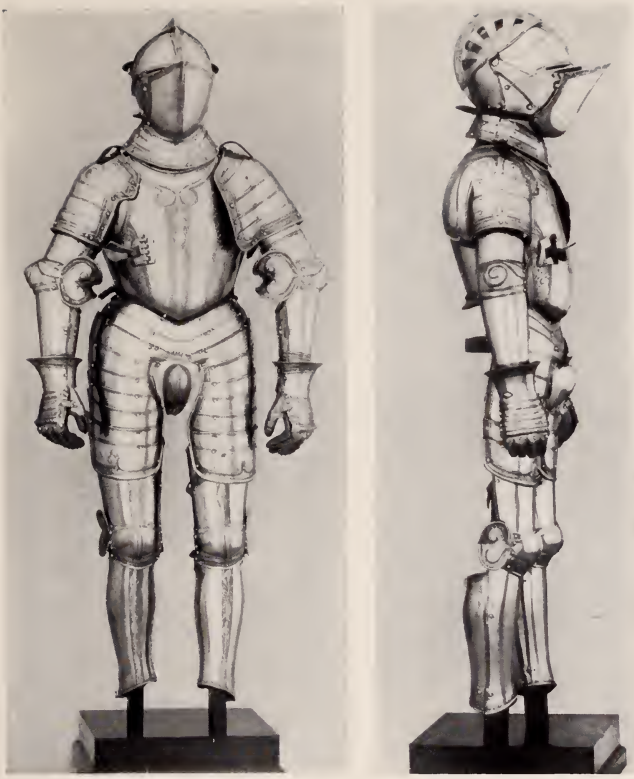


PLATE XXV

ENGRAVED ARMOR, 1540

DE DINO COLLECTION

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Knightly swords of this period are represented in the present collection (Case 18) by two splendid examples. (Plate XLIV.) One of them dates from the first quarter of the fifteenth century and bears a gilt bronze guard and pommel, the latter representing in enamels the arms of a de Gaucourt, possibly the one who figures in the history of Joan of Arc. Its blade is tapering and is so ground that its section is convex. The other example dates from the second half of the century. This specimen, from the Riggs and Meyrick collections, is one of the best of its type. It is admirable in its lines, delicate in its balance, and could be swung by one or both hands. Such a sword may well have been used by an English knight in the battle of Tewkesbury.

War hammers, *becs de faucon*, were in frequent service during this century. Short ones are shown in Case 17, and one which had a long shaft is important from its workmanship and Gothic inscription. Such an arm as this might have been in the hands of Jacques de Lalain, in one of his celebrated *pas d'armes*. With these are exhibited three short hatchets which were designed to be thrown. These, by the way, are among the rarest of Gothic arms. Several crossbows of this period are also shown. One of them bears inscriptions and a blazon: it belonged to Count Ulrich V of Württemberg and has been described by Baron de Cosson in Archaeologica, vol. 53, 1873. These early crossbows were made up of layers of whalebone, sinew, and sometimes horn, glued and bound together. They were "set" by means of an ingenious

lever, a "goat's foot," *pied de biche*, of which examples appear in the same case.

Pole-arms of this period are shown on the walls and at the base of the columns on the east side of the main gallery. Here appear selected types: hook-shaped *guisarmes*, flat-bladed "ox-tongues," knife-shaped *glaives*, and three-pronged *korsekes*, *chauves-souris*, and *runkas*. In the series here exhibited some of the arms are decorated at the base of the blade with etching and gilding, the background of the etched areas ornamented with parallel lines, not with dots or blank areas as in the sixteenth century. Early halberds are present in interesting variety and form a progressive series arising from simpler types of pole-axes and long knife-bladed *berdiches* (near Case 1).

Shields at this time were of three types: fist shields, arm shields, and standing shields. The first of these bears a boss into which the fist projects, grasping a cross-bar. These shields are made of wood or metal and are sometimes garnished with velvet. The fist shield is, by the way, a very early type: its use was common less in Europe than in the East and in northern Africa—in Tunis it is used at the present time in fencing exercises. The arm shield of the fifteenth century was usually broadly triangular, sometimes square, generally formed of wood and covered with rawhide. Standing shields were wooden, sheathed with canvas or hide, and their surface was often covered with gesso and painted. In the present collection hand shields appear in Cases 22, 23, 24, and on the east wall of the main gallery. Two arm

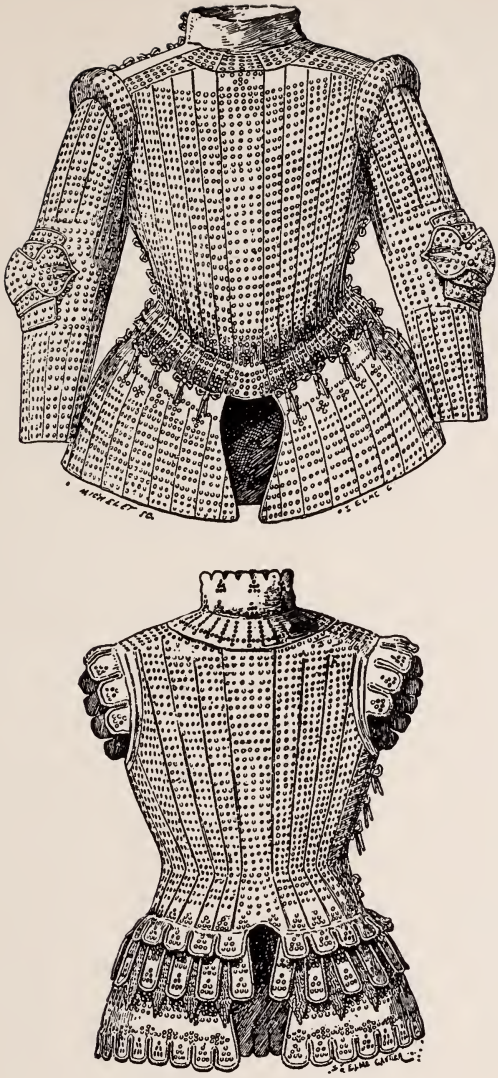


PLATE XXVI

BRIGANDINES, END OF XV AND MIDDLE OF XVI CENTURY. RIGGS COLLECTION

AFTER GAY

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shields are shown on the south wall of the main gallery and in this neighborhood appear several standing shields. The last were often part of the equipment of crossbowmen who sheltered behind them when setting their pieces.

Daggers were an important part of the fifteenth-century equipment, and of them there are four typical forms. One of these, the "kidney" dagger, had a heavy blade and a stout wooden handle out of which a guard was carved in two rounded lobes, which together suggest the name for this arm. It is a form which appeared already in the fourteenth century and its use continued for over a hundred years. The earlier daggers of this kind were the heaviest and the kidney-shaped lobes were of large size; in the evolution of this type the lobes become smaller and smaller until they can hardly be recognized. The second form of dagger is the *dague à rouelle.* In this the guard and pommel are shaped like disks and through their centers passes the blade. The disk-shaped guard and pommel were originally thick, shaped like cylindrical boxes, which in the development of this dagger became successively larger and flatter while the blade grew narrower, thicker, and longer. Its use extended well into the sixteenth century. The third type, the "eared" dagger, was distinctly an Oriental model, the hilt of which ends not in a pommel but in a pair of flattened or ear-shaped lobes. This dagger is frequently known as the *stradiote* from its use by the estradiots, semi-Greek or Levantine soldiers in Venetian service. It is first known

in the fifteenth century; some of the earliest forms are from Spain, and are probably Hispano-Arab. They are of beautiful workmanship and are rare objects in collections. (See figure in Plate XLVIII, which shows a number of decorated daggers.) The fourth type is the so-called "ox-tongue dagger," which appeared in southern Europe during the fifteenth century. It had a short, wide-grooved blade and a hilt flattened, often of ivory, usually ornamented by rosettes of pierced work, suggesting filigree. This broad dagger developed a short "ox-tongue" sword, or *cinquedea*, a name derived from the width of the blade at its base (five finger-breadths). (Plate XLIII.) Cinquedeas were used in northern Italy at the end of the fifteenth century and during the early sixteenth century. They were sometimes richly gilded and etched with Renaissance borders and figures. Actual specimens are rare and from their beautiful lines and decoration have an especial attraction to collectors.

The foregoing daggers are well illustrated in the Museum collection. "Kidney" daggers (Plate XLVIII), dagues à rouelle, and stradiotes are shown in Case 16; "ox-tongue" daggers and swords, in Case 20. In the middle of this case is a long, narrow, Venetian cinquedea, said by M. de Beaumont to have been worn as the formal sword of the Council of Ten. On the other side of the same case are specimens richly gilded and engraved. Two of these are probably from the hand of the greatest artist who decorated cinquedeas, Hercole di Fideli, whose work has been described in



PLATE XXVII

HALF-ARMOR ATTRIBUTED TO CHARLES DE BOURBON, 1520
HALF-ARMOR OF THE DUKE OF ALVA, 1565
RIGGS COLLECTION

SEE PAGES 70, 72

late years by the French archaeologist, M. Charles Buttin.

C. ARMOR OF THE MAXIMILIAN PERIOD (1500–1530)

The Austrian Emperor, Maximilian I (1493–1519), is said to have suggested numerous changes in the knightly panoply. In his court, "Gothic" armor was replaced by harnesses whose surfaces were developed into series of nearly parallel grooves. By this device each element of the armor was thought to be strengthened and at the same time given new beauty in play of lights and shades. In the earlier style points and ridges had been prominent; in the newer style surfaces became rounded or globose, and terminals were blunted or truncated. Thus casques rounded off their sharp median ridges, or crests, or even lost them entirely; the breastplate was globose, the tassets wide, truncated below. The defenses of knees and elbows were well rounded, and the sollerets, which were pointed in Gothic harnesses, now became excessively square-toed: in some cases their terminal plates measured six inches in width. The majority of these specimens are German, although the fluted style had been well begun by Italian armorers. In general, the Italian forms of "Maximilian" armor had the fluting formed as ridges upon a flattish background; the German fluting was distinctly grooved. This style of workmanship appears in German armor until about the middle of the sixteenth century, specimens dating usually from 1505 to 1525.

The present collection is rich in Maximilian armor. (Plates XXIII and XXIV.) It exhibits seven complete harnesses of various types, dating from 1500 to 1540; also a series of detached fragments and over thirty head-pieces. The earliest suit (Case 31) was lent in 1904, by Rutherfurd Stuyvesant. This is one of the most complete harnesses of its type. Its primitive features include a subdivided breastplate (of which the lower half was the *pansière*, quite in the Gothic fashion); a casque in which, as in armets à rondelle, the chin-piece opens, hinge fashion, at the point of the chin; margins of the plates unornamented, i. e., without the "roping" which became characteristic of Maximilian armor.

Another suit of great interest is shown in Case 32. (Plate XXIII.) This is parade harness dating about 1520, executed with fluting and engraving in the fashion of court costume. The puffs, slashes, and even the texture of the dress are pictured; a deep skirt is present (*braconnière à tonnelet*), and, as a second rare feature, the visor is carefully modeled from a human face, probably picturing the original owner. A similar harness is preserved in the Vienna collection and is said to have belonged to Philip I, who died in 1506. There can be little doubt that the present armor was designed for a noble of high rank: it is engraved on the sides of the visor with the briquette, or fire-stone of Burgundy, which had then become one of the badges of the Hapsburgs.

Near these specimens are harnesses illustrating various Maximilian types. In the earliest of these,



PLATE XXVIII

HALF-ARMOR OF THE DUKE OF SESSA, ABOUT 1560

DE DINO COLLECTION

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the fluting occurs sparingly (Case 38) and the head-piece suggests a Gothic salade. In another (Case 40), the borders of various plates are not "roped," a feature which, with its large "shells" at the side of elbow and knee, recalls the Gothic fashion. In still another suit (Case 37), this from the Riggs Collection, the elbow guards are like wide rings and were attached to the upper and lower arm by straps, after the Gothic fashion, instead of being riveted to intermediate elbow plates. Here, too (Case 34), is an admirable half-harness, fluted in the Italian style, its bands alternately bright or gilded and etched. There is good reason to believe that this armor was worn by Charles de Bourbon, constable of France, for it corresponds to parts of his harness which are preserved in Vienna. (Plate XXVII.) While referring to the fluted, gilded, and engraved armor of Case 32, we should note a *tonnelet*, or skirt of Maximilian armor, slashed, engraved, and gilded, which hangs nearby on the west wall. This is from the Tower of London and is said to have belonged to a harness of Henry VIII.

The Maximilian head-pieces of the collection (Cases 42 and 45) form an interesting developmental series. The earliest of these (1500) is practically a Gothic salade, but modeled more closely to the head; its great visor extends downward and is slightly rounded in at the neck. In the next type (1505), the chin region is emancipated from the visor and covered by a separately rotating piece, or beaver. In the Gothic harness, on the other hand, this element

did not belong to the head-piece, but was a separate reinforcing plate which could be strapped in position over the chin. In these early Maximilian armets flutings are few and the median crest is angular. Within a few years, however (1510–1515), flutings become numerous and the median crest is a wide ridge developed as a "roped" border. In all these instances, the neck-covering portion of the casque is made up of several large underlapping pieces, suggesting the neck cover of the more ancient salade. In the earlier head-pieces the Maximilian visor resembled that either of a basinet or an armet à rondelle. The visors of later ones became "bellows-shaped," i. e., moulded in transverse flutings, three at first, later four, five, or even six. In some instances (1515–1540), the visor is modeled, as we have already noted (Cases 29, 43), as a human face.

The great armorers of this time were Koloman Helmschmidt of Augsburg (who made the engraved and fluted arm and gauntlet in Case 41), Lorenz Helmschmidt (whose mark appears on the harness in Case 33), Matthaus Frauenpreis the elder, Conrad Seusenhofer, Valentin Siebenburger of Nuremberg, and various members of the family Treyts of Innsbruck (of the work of several of these artists we have examples in the series of helmets), and Wilhelm of Worms, the elder (who made the harness in Case 40).

During the Maximilian period, the equipment for the horse (*barding*) was complete (see *E. 4*, in main gallery, and the later harness, Plate LIII).



PLATE XXIX

ALF-ARMOR MADE BY POMPEO DELLA CHIESA, ABOUT 1575
DE DINO COLLECTION

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Its head was protected by a frontal (*chamfron*), its neck by crinets (*crinière*), its breast by a heavy apron-like element (peytrel, or *poitrel*), and its rump by a massive plate (*croupière*) which flared down on either side as far as the hocks. And by this time, i. e., the earliest decades of the sixteenth century, large numbers of barded horses appeared in actual use. In the fifteenth century, on the contrary, horse equipments were rare, though when they did occur, they were complete and beautifully modeled. Sometimes they included even leg armoring, as one may see from fragmentary specimens, as in the museum of the Porte de Hal in Brussels, or from contemporary pictures, as of the splendid equipment of the mounted armorer in the arsenal in Vienna.

D. JOUSTING ARMOR

It may be safely inferred that the development of armor, whether for man or horse, was influenced by the widespread fashion of tourneying and jousting, for in these military sports various defenses were needed which would not be worn in actual service in war. In the end, accordingly, panoplies came to be designed solely for jousting. The evolution of this special kind of armor, it is found, extended over considerable time. Thus, during the thirteenth and fourteenth centuries it is known that knights fought in the same armor they would have used in battle, the display being merely a mimic battle where adversaries fought in parties (tourneys) or in pairs (jousts). (Plate XV.) By the fifteenth century,

however, the rules of these games had become more definite. Participants were armed in a particular manner, as in heavier and more complete harnesses, and with special weapons. And by the sixteenth century, as we know from various tournament books, such as Freydal, or those of the Dresden court, or of Duke Wilhelm IV of Bavaria, or in Maximilian's Triumph, the trappings had become highly diversified and eccentric. For there then arose scores of kinds of combats in which the participants fought on horseback or afoot. Of equestrian combats a common form was the "Deutsches stechen," in which the course was more or less open (see equestrian armor *E. 1* in main gallery, also armor in Case 57). Another form was "Sharfrennen," a course run without barriers, the contestants having huge thigh guards attached to the saddles to prevent accidents from collision. Still another form was the Italian course (*ueber die Pallia*), where the contestants were fully armed, but were nevertheless separated from one another by barriers (see armor on equestrian figure *E. 5* in Case 51, and the tilting cape in Case 59), and a specialized variety of this was the "Welsches Gestech" (see parts of armor in Case 58). In Maximilian's Triumph, groups of knights are pictured armed for no less than eleven kinds of courses. Now since each type of Gestech, or "running," brought into play special defenses, it came about that by 1550 each suit of armor was apt to be provided with numerous supplemental or reinforcing pieces. As many as a hundred "pieces of change" were sometimes provided



PLATE XXX

PARADE ARMOR, ABOUT 1590
STUYVESANT COLLECTION

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for a prince's armor. (Compare armor shown in Cases 88 and 89.) Thus, for combat afoot in the lists the armor should protect the wearer both back and front, guarding thigh, groin, inner side of elbow, and armpit. And these defenses were the more necessary since the combatants developed a form of jiu-jitsu, in the gyrations of which various points of the body, if unarmored, were dangerously exposed. For numerous forms of mounted combats defenses of different fashions would of course be selected.

In a word, in earlier days the jousters rode in complete armor, bore a shield on the left arm and a lance held freely in the right hand. But in the sixteenth century the combatants were usually separated from one another by a barrier which in the end became so high that hardly more than their heads were exposed. During this development armor sometimes was given great strength; a harness designed for protecting only the upper part of the body might weigh a hundred pounds, of which weight a third belonged to the great tilting helm. This from its great weight had to be securely fastened, hence it came to be bolted to the cuirass. With such a harness, a special shield was laced in position, and a lance, sometimes four inches in diameter, was practically locked into place by rests attached one in front of the breastplate and one behind the shoulder. As a type of this specialized defense, we note again the equestrian figure (*E. 1*) shown near the front of the main gallery. Here it will be noticed that armor for the legs of the rider has been entirely discarded. In such instances, the armored

saddle, which was pulpit-like at an earlier date, had become reduced to a mere pad from which the rider slid off the back of his charger when struck fairly by the lance of his adversary. Under this condition his fall was not a very serious affair, but had he been imprisoned in an iron saddle his back would probably have been broken. Interesting supplemental pieces for tilting, with helms and shields, rondelles of lances, are exhibited in Cases 56–59 and 74. (See also several pieces of armor in Plate XXXVII.) In the series of tilting helms in Cases 56 and 59, there are half a dozen which deserve careful examination. One of these especially, Case 59, belonged to Sir Giles Capel and was hung over his tomb until about the middle of the last century. Sir Giles was a well-known champion in his day: he fought in France with Henry VIII and was present on the Field of the Cloth of Gold. The present head-piece was prepared for combat afoot in the lists and is one of the best of its kind. One notes its numerous openings for breathing: they were the more necessary since the wearer in the exertion of wielding sword or axe, breathed hard" and rapidly, and, without suitable apertures for ventilation, would have run the risk of becoming suffocated. It may be mentioned that accidents due to this cause are occasionally recorded.

Tilting lances are also shown in Cases 56 to 59, as well as on the south wall of the long gallery. In some of these, the shaft, although apparently heavy, was carved in grooves in such a way that the lance could readily be shattered on a wide shoulder piece or



PLATE XXXI

BACKPLATE AND ARMET OF PARADE ARMOR, ABOUT 1590
STUYVESANT COLLECTION

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manteau d'armes, especially provided with ridges (see Case 59). It was a broken lance of this type, doubtless, which caused the death of Henry II (1559) when a splinter entered his eye. Carrousel lances were the latest and most degenerate form of these arms. In these the base of the shaft is ornamented with fragile fretwork and the point is no longer a weapon, but an implement for catching a ring.

E. THE ARMS OF THE EARLY DECADES OF THE SIXTEENTH CENTURY

The swords of these decades are either modifications of the earlier Gothic forms or special types newly developed (Case 46). In the former class the pommels are apt to become pear-shaped, lose their strictly bilateral symmetry, and develop "roping" in their decoration. The quillons either droop more sharply or are curved S-shaped, usually at right angles to the blade. (See second figure, Plate XLIV.) In many swords dating from the early sixteenth century the guard develops a ring (*anneau*) at the side, and in some instances, of slightly later date, a pair of rings (*pas d'âne*) at the side of the blade in front of the quillons, as grips for the first and second fingers. Of the newer types, we note a German sword, whose decoration on hilt and blade is elaborately etched after designs by Albrecht Dürer (?). There is also a Venetian sword[1] of first

[1] It might be mentioned as an amusing test of the interest and beauty of this sword that the distinguished expert, M. de Beaumont, would rarely fail to take it in his hands and kiss it when he visited Mr. Riggs's gallery.

rank, its hilt elaborately etched, showing traces of gilding. In its decoration, it suggests the famous "casque of Boabdil" in the museum in Madrid. (Plate XLIV, and pommel in Plate XLV.) Below this sword is an historical blade, bearing the inscription *Leo X, Pont. Max. III.* This is one of the earliest of its type extant. Papal swords, it may be noted, were presented to sovereigns and distinguished generals, commemorating services for the Roman faith. There are recorded about thirty swords of this type, of which all but two are in the possession of European governments. Another interesting sword exhibited in the same case is a state sword which belonged to the family of the doges Mocenigo.

From the early decades of this century date a number of the maces and war-hammers shown in Case 48. (Plate XLVII.) The maces of earlier date have handles which suggest daggers à rouelle, and heads of small size, their plates sometimes inset with strips of brass in the fashion of the end of the fifteenth century. The maces of the middle of the sixteenth century are sometimes richly decorated with foliation and strapwork, chiseled or etched. One of the important maces in the series is of this period and bears the badge of Austria (Case 48): another, richly damaskeened, is believed to have belonged to Henry II of France (Case 102). The later maces have large heads, egg-shaped, and the handle is hardly to be distinguished from the shaft. In Case 48 are also shown numerous examples of war-hammers and hatchets, in some of which (*brandestoc*) a blade is

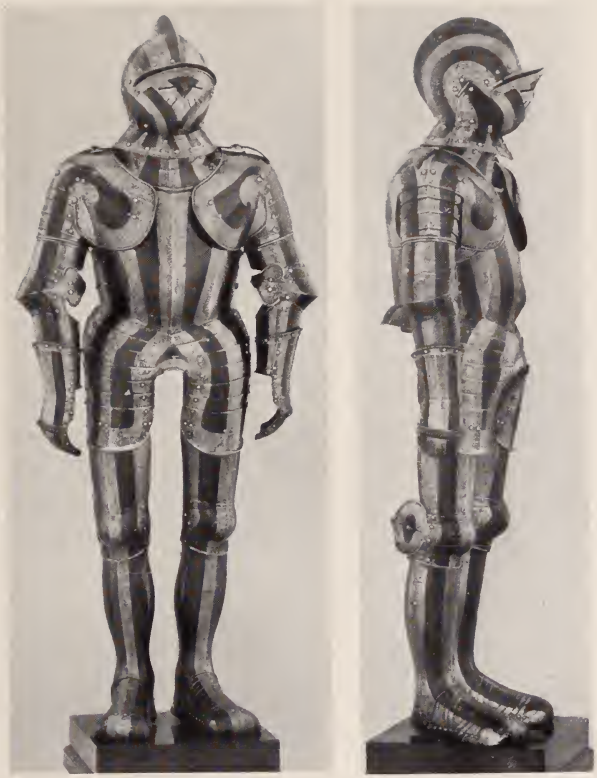


PLATE XXXII

HARNESS, BLACKENED AND ENGRAVED, ABOUT 1600

DE DINO COLLECTION

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concealed in the handle. Many of the present specimens are decorated with etching and gilding. In rare instances, wheellock pistols are fashioned in combination with hammers and war hatchets. Military flails are also shown in this case. Earlier types of these arms appear in a wall panoply in the southeast corner of the large gallery.

Pole-arms of the early sixteenth century, including many historical pieces, are attached to the columns on the north and west sides of the main gallery and to the west wall. Halberds are usually wide-bladed, with stout, moderately short tips, quadrangular in section (see the later "Gothic" halberds on the east wall of the main gallery). In Mediterranean countries, pole-arms were often trident-shaped (see also the series at the left of the Gothic tapestry on the east wall of the main gallery). A number of these arms retain their original shafts: these are sometimes carved, sometimes studded with gilt-headed nails and encased with velvet. In the present collection the series of these types is exceptionally complete.

F. ARMOR OF THE MIDDLE AND LATE SIXTEENTH CENTURY

After the Maximilian period, armor began a series of changes in form and decoration which led ever in the direction of decadence (especially see Cases 49–51, 75–81, 99–100, 104–105). The plates lost their strengthening ridges and were of poorer metal, workmanship, and form. And they continually increased

in weight as fire-arms became more effective. The ornamentation of armor was now expressed less in the development of the form and ridging of the plates than in superficial traceries, etched, stamped, or gilded. Where the surface of plates became embossed, as in the richest type of sixteenth-century armor, the raised ornaments tended to weaken the armor. In short, in all this decoration, it was the goldsmith who worked rather than the armorer. (Compare Plates XXV and XXVII to XXIX.)

The general changes which appear during the middle and later part of the sixteenth century are especially well shown in the harnesses of Cases 75 and 79. The helmet was provided with a sharp, keel-like crest, and the visor, instead of being in a single piece, was now formed of upper and lower moities, the upper one (visor, or *visière*) pierced with the slits for vision, the lower (*ventail*) perforated with breathing holes. The neck region of the helmet was provided with one or more overlapping collar-shaped plates, alike in the front and on the back. (See Cases 75, 79, and 108.) The breastplate, which was well rounded in the Maximilian period, now became elongated and sharply ridged, developing a point (*tapul*) either in the middle of the plate or near the waist-line (Cases 61, 67, 93, 98). In later forms the shape is punchinello-like (Cases 94 and 105). (Plate XXX.) With these changes the tassets tend to become wider and shorter. The leg defenses lose the graceful lines of fifteenth-century armor: but, to compensate for the lack of skilful modeling, the ankle region



PLATE XXXIII

BURGANETS AND CLOSED HELMETS
XVI AND EARLY XVII CENTURY
RIGGS COLLECTION

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acquires a series of flexible joints. In the armor of the feet, the truncated sollerets (*sabbatons*) of a Maximilian suit become roundly ended toes. In the latter part of the century, a tendency is present for leg armor to be discarded even in the better suits.

During this period, head-pieces were of many types. (Plates XXXI to XXXV.) The closed helmet was for heavier service. The burganet was a lighter head-piece, close-fitting, with articulating plates covering ears and chin (Cases 107, 109). The morion and cabasset were hat-shaped head-pieces with crescentic or flat brims respectively, provided with "ear tabs," strengthened by metal plates (Cases 103, 112, and 113). These were for lightest service. In the burganet the face was sometimes protected with a visor, or *buffe*, which locked in position over face and chin, but could readily be detached. (Cases 60 and 109.)

A number of head-pieces here exhibited are of historical interest. Thus, there are head-pieces which we have good reason to believe belonged to Henry II of France (Cases 103, 109), to Charles IX (Case 109), to Marquis de la Tremouille (Case 108), to Louis XIII (Case 107), to various members of the house of Savoy (Cases 109, 110), and to state guards of several Saxon electors (Case 111), of Cosimo de' Medici (Case 107), of Pope Julius III (Case 110).

The harnesses of this period are well illustrated in the large north gallery. Here are suits of decorated

armor, dating from 1540 to about 1600. They show the various forms of etching, punched work, gilding, and embossing. They illustrate as well the different types of helmets, breastplates (Plate XXXVI), gauntlets (Plates XXXVIII-XXXIX), and leg armoring. Among the historical suits are the embossed half-armor of the Duke of Alva (Case 104 and Plate XXVII), an engraved and gilded half-armor of one of the de' Medici (Case 100), two suits of Sir James Scudamore (Cases 94 and 95), the equestrian harness of a Colonna, probably Marcus Antonius Colonna (central figure, *E. 9*, in north gallery), the complete harness with chamfron and supplemental head-piece of a Duke of Lorraine (Case 75), a half-armor of the guard of Duke Julius of Brunswick (Case 92), and parts of the sumptuously embossed armor of a Governor of Milan, the Duke of Sessa (Case 84). In the same gallery is a fairly complete series of the pole-arms of this period, many of which are engraved and gilded (Cases 69 and 70). A large number of the round shields (*rondache*) for parade, engraved, gilded, embossed, are shown here also. (Plate XLI.) In this series the Museum is particularly rich, exhibiting upward of sixty specimens. Among the artist-armorers whose work is here illustrated may be mentioned Pompeo della Chiesa (Case 99), Pfeffenhauser (102), Wolf of Landshut (59, 80, 102), Piccinino (84, 101), various members of the family Negroli (107), Colman (55), Frauenpreis (61), Seusenhofer (76), Siebenburger (83), Wilhelm von Worms (59 and 83), Jacobe (94, 95, 102), Spaccini (101), von Speyer



PLATE XXXIV

BURGANET OF HENRY II, ABOUT 1550
DE DINO COLLECTION

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(72), Bartolomeo Campi (one shoulder defense, 104), and Hopfer (83).

G. SWORDS AND DAGGERS OF THE SECOND HALF OF THE SIXTEENTH CENTURY

This was an epoch of enriched side-arms. Sword and dagger were worn constantly, and, at a time when fleets from India and America were emptying their treasures into the markets of Europe, beautifully decorated arms were seen everywhere. (Plates XLII–XLIV, XLVIII, XLIX.)

In Italy the short, wide-bladed cinquedea (Plate XLIII) reached its highest point of development during the first two decades of the sixteenth century; its blade was richly etched, gilded, and blued (Case 20); and its sheath was an admirable example of the art of the worker in leather. At this time and slightly later there was often worn a cutlass of a richly ornamented form, suggesting Venetian galleys and the Orient: its blade was ground in small parallel grooves or in close-set elliptical areas, and its hilt was massive, ornate, usually of gilt-bronze, with asymmetrical guard and pommel (Case 20). Then, too, arising partly from newer dealings with all parts of the world, there appeared a great variety in swords and their furnishings: the commonest type was the rapier, with blade long and slender, and hilt developed in a basket-work of delicate, overlapping, or interlacing bands (Cases 55, 61, 90, and 91). These arose from and around the anneaux and pas d'âne of the earlier sword (p. 67), and soon became a means of decoration,

for they twisted gracefully about the hand, swept along (hence the name "swept-hilted") over the knuckles, and focused near the pommel. Rapiers at this period were objects of rich adornment; their hilts were incrusted with gold and silver, inset with medallions and enamels chiseled in fine relief. (Plate XLII.) Of these, we have numerous examples in our collection (Cases 90 and 91). Some are of historical interest. One bears the arms of the Albani, and is believed to have been in the possession of Pope Sixtus V. A rapier mounted curiously as a cane may have belonged to Philip II. In some of these examples the blades are of greater interest and more precious than the elaborate hilts; for this was the time when Toledo and Milan were producing their best steel, and when such great swordsmiths worked as the elder Sahagun (Case 91), Sebastian Hernandez (82), and Juan Martinez (61), all of whom made swords for the court of Spain, also Serafino di Brescia, who was a friend of Francis I, Sebastian Ruiz (82), who was called to the Austrian court, Lucio Piccinino (82), who executed swords for Charles V and Alessandro Farnese, and the other Milanese artist, Pietro Caino (55), artists so famous that their names and marks were copied fraudulently in many cities of Europe during and ever since their day.

Highly decorated belts and hangers (Case 91) were provided for these swords: some were of damask, elaborately embroidered; some were of velvet; others, of tooled leather with buckles chased and damaskeened. (Case 126.)



PLATE XXXV

BURGANETS, MORIONS, AND CABASSETS, XVI CENTURY
RIGGS COLLECTION

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Daggers were designed to accompany the swords, their pommels and guards corresponding in form and decoration (Cases 55, 90, and 91): most of them are small, with delicate blades, the latter in some cases ground in parallel, deep, long grooves, in which were lines of fine perforations. These, it is said, were arranged to carry poison; for such a blade once wiped with a poisoned cloth could still be cleaned, yet leave in the fine pores enough poison to make even a slight wound fatal. The evidence is vague that these daggers were really used in this way, but the story is interesting, suggesting the times of Cesare Borgia.

A beautiful type of dagger, which by the way has ever found favor with amateurs, was developed from the ancient Swiss short-sword. This arose naturally during a time when war had become a trade and when Swiss mercenaries were renowned throughout Europe for their valor and fidelity; for their pay enabled them to gratify a fantastic taste in arms and costume. Especially their dagger-sheath became a splendid affair: it was usually in bronze, gilded and perforated (Case 66), in some instances after designs by well-known artists, e. g., the younger Holbein. Its favorite theme was the "dance of death." (Plate XLIX.)

H. POLE-ARMS

Pole-arms were in constant use during the sixteenth century; they appear in the field, in court, in processions, among civic officers, sometimes in ornate design, occasionally enriched luxuriously. Even the simple forms were often ornamented to some degree,

if only with pierced work or in the curves or prongs of their outline. In the next higher type, they would be ornamented by etching more or less complicated in design. In a still higher grade, the etched pattern would be picked out with gold or in some examples the entire surface would be gilded, either by damaskeen, or as "fire-gilt" from a mercury amalgam. In the most elaborate forms the decoration appeared as etching, gilding, bluing, and incrusting with metals of various colors, including of course silver and gold. Various forms of halberds in which the better types of enrichment are shown are exhibited in Cases 69 and 70. Here one sees, for example, late types in which the decoration by silhouetting is carried to a high degree of refinement. In such instances the blade sometimes bears at its base a melon-shaped rosette formed of separately welded pieces, which is of great ornamental value, since it shows its perforations from all points of view. In the present collection, there is an important series of fauchards, the heads of which are shaped like knives, but furnished with ornate prongs on the back of the blade. One of these fauchards—early seventeenth century, however—which belonged to the state guard of the Borghese who became Pope Paul V, exhibits every process of ornamentation—silhouetting, engraving, gilding, damaskeening, punched work, bluing, and incrustation with metals of various colors. (Plate XLVI.) This incrusted work, by the way, is a variety of damaskeening; in the latter process, the surface of the metal was first scratched with a sharp instrument, like



PLATE XXXVI

BREASTPLATES, XVI AND XVII CENTURIES
RIGGS COLLECTION

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a graver, and upon this "hatching," which formed "burr"-edges, precious metals were attached in lines or surfaces by hammers and burnishers. In the incrusted work, on the other hand, the actual design was at once chiseled into the metal, and into this special grooving the various metals were hammered. In damaskeening, the traceries were practically flush with the surface of the metal: in incrusted work the pattern usually stood well above the level of the plate.

The shafts of halberds vary in accordance with the importance of the object. They were undecorated in the simpler arms; they were finished with banks or rows of brass-headed nails in arms of higher grade; in other instances they were covered with velvet and adorned with beautifully woven tassels of silk. Carved shafts are rare except in such hunting arms as boar spears. Extremely rare is the delicately carved handle of a north Italian halberd, probably Florentine, shown in Case 69.

During later times pole-arms suffered from the same decadence as defensive armor, although numbers of halberds decorated with etching and gilding were produced in Austria and Saxony during the first half of the seventeenth century (note specimens arranged on columns near the north end of the main gallery; see also middle figure in Plate XLVI). But even in those we find decadent changes. The last forms of halberds were the spontoons which were carried by non-commissioned officers during the eighteenth century. These were usually simple affairs

with small heads decorated only sparingly. They are represented in the present collection by a numerous series (arranged on two racks against the north wall of the main gallery), which is the more remarkable since nearly every specimen is richly engraved and gilded.

I. BOWS, ARROWS, AND CROSSBOWS

Bows and arrows were among the earliest and commonest arms, yet early specimens of them are rarely seen in collections. As objects of art they held but low rank, and they rarely outlived their usefulness.

It is a curious fact that not a single specimen of the early English longbow, which in the fourteenth century was probably the most famous offensive arm in Europe, appears to have survived, though a number of bowstaves, dating from 1545, were obtained when the wreck of the Mary Rose was recovered off Spithead. The only bow which may prove to be English and earlier than the middle of the sixteenth century is said to be preserved in the castle of Dover.

In the present collection, there is but one European longbow (Case 106), and it is relatively late—not older than the seventeenth century. It is 76 inches in length, well modeled, and of great strength; it was made in Lausanne and bears the name of its maker stamped in the wood near the velvet grip. Complete "cloth-yard" arrows, dating earlier than the seventeenth century, appear to be unknown. Of extreme rarity are early "bracers," which were strapped to



PLATE XXXVII

PIECES OF ARMOR, XVI CENTURY

MAINLY RIGGS COLLECTION

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the archer's forearm to prevent injury from the bowstring when it was released. No less than nine of these arm-defenses are exhibited in Case 106, and as a series they are probably unique. They date from the sixteenth to the early eighteenth century, and all are of ivory. Five of them are elaborately incised, showing coats of arms and figures of Saint Sebastian, the patron saint of archers.

The short bow, common in southern European countries, was probably introduced from the East. It appears semi-oriental; in fact, most of the specimens preserved in museums are of Turkish, Persian, or North Indian origin. Few examples are known which date earlier than the seventeenth century. Especially to be noted, therefore, is an Italian bow (Case 106), which dates from the closing years of the fifteenth or the early years of the sixteenth century. This is interestingly decorated and bears the coat of arms of the Capece-Galeota family of Naples. Its preservation is due to its having been an *ex voto* to Saint Sebastian: for centuries it was exhibited above a statue in a North Italian church. With this, and of the greatest rarity, is its quiver and a series of arrows. It may be remarked that short bows of the present type were formidable arms. They were of great elasticity, having been built up of layers of sinew, wood, and horn. A bow like the present one would have shot a flight-arrow a distance of about five hundred yards, a range considerably greater than the longbow's.

In the course of time, the bow of simpler type be-

came replaced by the *arbaleste*, or crossbow, also a very ancient arm, which not only shot a heavier arrow but was in practice easier to aim and bend. The bow itself in earlier arbalestes (Case 17) was a stout affair built up (usually) of whalebone; in the sixteenth century, however, it came to be formed of an arc of steel, so heavy that its cord could not quickly be set. Even a heavy hand-lever ("goat's foot," *pied de biche*) was not easily employed. Hence arose the stirrup-crossbow which was in common use from the end of the fifteenth century (see specimens on east wall of main gallery). In such crossbows a stirrup-like iron, through which a foot was passed, is attached near the bow. By this device, the bow could be held firmly while the archer wound up his windlass with both hands. In general, stirrup-crossbows are large, heavy, and of indifferent workmanship. In rare cases, they were inlaid with ivory traceries and rosettes, and the metal parts were picked out with inset bands of brass.

The crossbows which are best known in collections are those which were wound by a *cric*, a mechanical device using cog and ratchet. When the crossbow was to be wound up, the cric was slid in place over the hind end of the stock. In front of it was a bar which ended in a hook or claw. This secured the bowstring and the cog was now turned by means of a long arm which gave strong leverage. Crossbows of this type are of three typical sizes: complete (*Ganze-*), half-sized (*Halbe-*), and quarter-sized (*Viertelruestung*), the accurate range of these pieces being respectively about 80, 50, and 30 yards, al-









PLATE XXXVIII

GAUNTLETS, XV AND XVI CENTURIES
MAINLY RIGGS COLLECTION

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though of course the bowshot would be several times these distances. In the largest examples, the bow is so short and heavy that it suggests a carriage-spring.

It is interesting that the use of crossbows of this type still survives from the Middle Ages. Numerous guilds are known, in which, like the one in Dresden, many of the old crossbows (sixteenth or seventeenth century) are still in use, and on festival occasions the members of the guild shoot at the popinjay much in the same fashion as did their, or for that matter our, forebears five centuries ago.

In the present collection excellent crossbows of various types are shown. In some cases, the stock is partly or entirely incrusted with bone or ivory, and richly ornamented. Decorated borders separate the shaft of the crossbow into bands which in turn are often richly incised with scenes and arabesques. A heavy crossbow in the present collection came from the Gewehrgalerie of Augustus the Strong. Its metal mountings are of gilded bronze, carefully incised and perforated. It was probably made by a member of the Haenisch family, which has worked for the Saxon court from the sixteenth century to the present day—a case of professional conservatism which suggests the Miochin family in Japan.

These crossbows, like the earlier ones, shot heavy bolts or quarrels (Case 106) whose heads, weights, and feathering indicate to what degree the use of the crossbow had become specialized. War bolts had heavy heads shaped like lance-points. Bolts for cutting cordage or rigging had forked heads, sharp as knives. There were many types of bolts with blunted

heads; some were for signaling, and whistled as they flew. In many cases, when the shafts were feathered, the "feathers," which, by the way, were usually of wood, were placed in position somewhat obliquely, so that the bolt rotated around its long axis like the ball from a rifle.

A third form of crossbow is represented by specimens dating from the middle and late sixteenth century. These are crossbows *à jalet*, or prodds, with long wooden stocks, ending usually in a ball, arranged for shooting a pellet of lead instead of a bolt. The string developed a cradle in which the pellet was placed. Such crossbows are light both in stock and bow, and were used for fowling. The present specimens are of excellent quality. Their shafts are decorated with inlaid ivory and bone, in some cases richly silhouetted and incised.

The final type of crossbow is a small but heavy prodd used especially during the seventeenth century (Case 106). In this type, the stock was largely of metal, ending, however, in a small wooden butt. The bow was set by means of a goat's-foot lever which formed a part of the metal stock. The earlier crossbow à jalet was set by a wooden pied-de-biche, which was carried separately by the archer.

J. FIRE-ARMS OF THE FIFTEENTH TO THE EIGHTEENTH CENTURY

Cannon

Reference has already been made to two early cannon that are shown in the Gothic division of the main gallery and date from the fourteenth and fif-



PLATE XXXIX

GAUNTLETS, XV AND XVI CENTURIES
CLARENCE H. MACKAY AND RIGGS COLLECTIONS

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teenth centuries. One of them is a pierrier, which used stone cannon balls instead of the iron ones invented later. Not until the beginning of the sixteenth century, however, did cannon fairly rank as objects of art. At this time numerous founders throughout Europe were producing cannon carefully designed in artistic lines. Inventions, too, at this time changed the construction and ornamentation of the pieces. A small cannon shown in Case 46 illustrates an interesting phase in the art of cannon-making during the first half of the sixteenth century. This is a bronze culverin prepared by order of Charles V in 1523, and cast in Palermo by a certain Pertus. It is remarkable in having been founded in sections which screwed together. It is decorated elaborately with inscriptions and coats of arms. A pair of small cannon cast nearly a century later are shown near Case 122. These are said to have belonged to a series presented by Henry IV to the Duc de Vendôme in 1606. They were traditionally part of a wedding gift and were fired on the day of the ceremony.

A cannon of still later date, about 1630 (near Case 61), is an interesting relic of the Turco-Austrian wars. Its barrel is Oriental, made of Damascus steel and bearing Turkish ornaments incrusted in silver. The mounting is Austrian. It is known that these small cannon were often used during seventeenth-century campaigns: they were sufficiently small to be drawn by artillerymen into effective position on the sides of hills. The present example is a gift to the Museum by Rutherfurd Stuyvesant.

GUNS

The collection is rich in guns of the earliest types, i.e., those antedating 1700. Of these there are in all about forty specimens, largely from the Riggs Collection.

In a general way, it may be remarked that the use of gunpowder for hand fire-arms was developed with surprising slowness. In fact, during the centuries when the most beautiful armor was worn guns were already in fairly common use. The earliest gun, which dates from the fifteenth century, was a hand-cannon, similar in type to the cannon of the period, but mounted at the end of a wooden stave which might be held under the soldier's arm. The gun or heavy end was supported separately by a forked stake which removed in part the shock of the discharge, and at the same time aided the user to aim his piece. Such a gun was evidently a crude affair. It could not be quickly reloaded and it was not used very successfully. The one who manipulated it ran a dangerous risk of being cut down before he was able to load and discharge his piece. There was also a curious prejudice against the use of fire-arms, and especially of hand fire-arms: they savored of witchcraft and the sulphurs of Satan. Then, too, people at large preferred old methods, and it was surprisingly long before fire-arms superseded bows and crossbows. Thus, in England, not until Elizabeth's time—when gunpowder appears to have been manufactured for the first time in England—were muskets ordered to replace arrows (1596)—an order which, by the way,



PLATE XL

GAUNTLETS OF THE DUC DE GUISE (?), ABOUT 1560
DE DINO COLLECTION

SEE PAGE 72

occasioned general murmuring in the English army. Still the muskets even in the early sixteenth century were an improvement upon the earliest hand cannon, and in the following respects: they had longer barrels within which the explosive thrust of the powder could be transmitted to the leaden bullet; the gun had developed a kind of stock and butt which could be better supported; and the mechanism for firing the piece was now a matchlock by which the burning end of the match (tinder in rope form) could by a mechanism be pushed down squarely upon the small pan of powder which led into the gun barrel. The earlier gun, on the other hand, was fired by applying the burning match to the touch-hole by a hand which might not at a crucial moment have been the steadiest. Matchlocks, it may be mentioned, were found serviceable during a long period. They were, in fact, retained in use in Japan until the fall of the Shogunate in 1868 (see Japanese Gallery, Case O. 12). In the present collection matchlock muskets, or harquebuses, are shown in Case 87 and in the corner near Case 61. The earliest, however, does not antedate 1550. In general, the matchlock muskets which have come down to us are not richly ornamented—an exception is the one noted in Case 87, where the stock is elaborately carved and the lock is enriched with silver.

Wheellock guns (Cases 62, 87, and 121) came into use in Germany about 1520 and gradually superseded the clumsier matchlocks. In the newly invented gun the cord of burning tinder, with its rapidly changing length and frequent misses, was discarded. The im-

proved arm introduced the principle of flint and steel and was so arranged that the fire-stone, which was then pyrites rather than flint, remained stationary, and it was the steel which spun around in the form of a wheel with ribbed or file-like edge. In such locks, the fire-stone was held in a long-handled wrench or "hammer" which was lowered by hand so as to touch the steel when the piece was to be discharged. Meanwhile, the steel, or wheel, had been wound up so that it would revolve rapidly when its spring was released by the trigger. A single winding, it may be mentioned, was sufficient to allow a piece to be discharged half a dozen times. Thanks to this newer invention, it became rarer for a gun to misfire, hence the greater practical value of the musket and the extension of its use to people of all classes throughout Europe. Its discovery was hailed as epoch-making: guns became fashionable and great artists were employed to prepare and embellish them. In fact, at no time in the history of fire-arms were more beautiful guns prepared than during the later part of the sixteenth century and the earlier part of the seventeenth century. (Plate L.) The stocks were richly incrusted with bone and ivory, or with various woods; the metal ornaments were delicate, and the barrels and locks were richly carved and gilded. The taste which governed the art of the gun-maker of this period can well be appreciated by examining the objects shown in the north gallery, in Case 87. Three of these, dating from the early seventeenth century, were executed by members of the Sadeler family, whose archives



PLATE XLI

RONDACHES, XVI AND XVII CENTURIES
RIGGS AND DE DINO COLLECTIONS

SEE PAGE 72

are sometimes small powder flasks, or primers. These contained a fine grade of powder which was placed in the pan of the touch-hole. The usual powder was of much coarser texture. (See also the primers and spanners in Case 63.)

Guns of the type here described are in certain instances rifled. It may be remarked that the art of rifling a gun barrel is fairly ancient, dating possibly from the closing years of the fifteenth century. The grooves cut in the barrels were, however, at first straight or nearly straight, and were intended less for the purpose of causing the slug to revolve than for keeping the barrel clean.

Different forms of wheellock guns are represented in the present collection, varying from small, light fowling-pieces to siege- or wall-"cannon." Of the former type there is the *Tesching* (Case 62) with its long delicate barrel and light stock, which have given rise to the view that it was a woman's gun. The majority of these light guns are of German workmanship: they appear to have been a favorite arm in the Baltic provinces. Still another form of wheellock has a curious heavy stock bent almost hook-shaped—the "petronel" which figures in the revolt of the Netherlands and in the Huguenot wars in France (Case 62). Fowling-pieces, boar-guns, and muskets are represented in the cases noted. In Case 121 are also two heavy wall pieces. One of them, from the civic arsenal of Dantzic, bears fine engravings and numerous inscriptions on inset plates of bone. The latest wheellocks, 1630–1720, are apt to have their

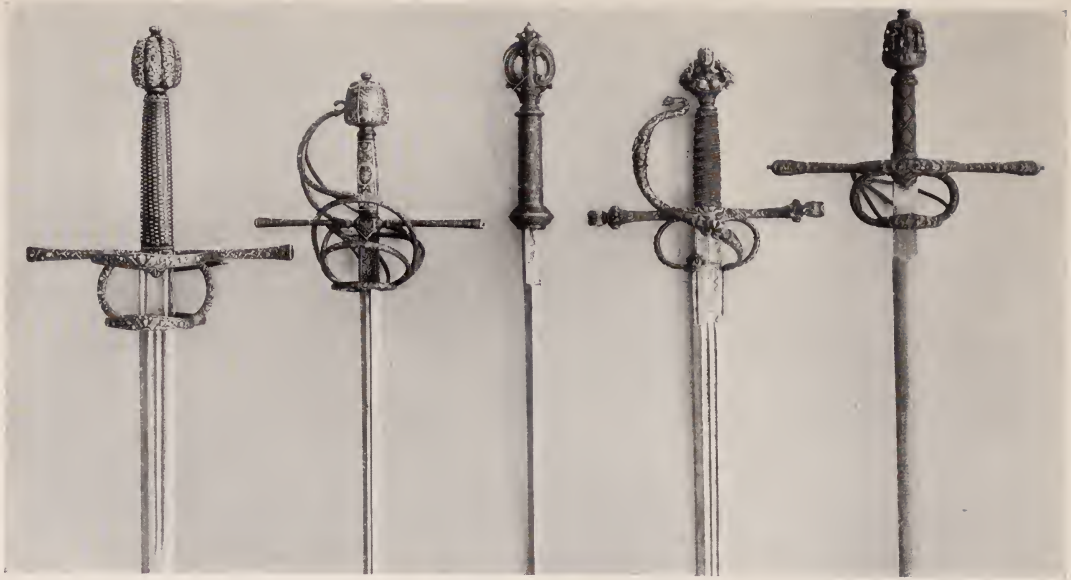


PLATE XLII

SWORDS, XVI CENTURY

DE DINO COLLECTION

SEE PAGE 74

stocks unornamented, but their locks richly engraved. In the last case noted are "forks" on which harquebuses were supported in actual use.

It is not generally known that many of our modern inventions in fire-arms were foreshadowed at an early period. Thus the wheellock period, roundly between 1520 and 1650, was especially fertile in the results of experimenters. Double-barreled arms were well known. In fact, even in the fifteenth century, hand-guns of two or more barrels appear to have been in fairly general use, as well as "organ-pipe" cannon, whose many barrels suggest closely in principle the "pepper-boxes" of our fathers' times. Breech-loading cannon were common during the fifteenth century. Revolvers with devices suggesting nineteenth-century patents were used during the sixteenth and seventeenth centuries. In some of these (Case 86) the outer barrel was single and its base was formed of a chambered cylinder containing numerous cartridges. A not uncommon device in sixteenth-century guns was a double lock to guard against misfire: with this there was also an adjustment whereby two charges, one deeper than the other, could be fired separately from the same barrel.

An early improvement upon the wheellock was the snaphaunce (Cases 86 and 121, three specimens in all), which was invented during the earliest years of the seventeenth century. This device was in a sense the opposite of the wheellock. In the latter the fire-stone remained in place and the steel moved against it; while in the snaphaunce, the flint was driven against

the steel, which remained more or less stationary. The steel was here arranged as an upright plate furrowed on the surface which the hammer was to strike, and capable of being tilted by the stroke so that the sparks might enter the priming pan. This later adjustment, however, was usually imperfect, and the priming pan was apt to be first opened by hand. In the snaphaunce, separate springs for hammer and steel were attached on the outside of the lock, and took the place of the spring of the wheellock, which was somewhat complicated. Moreover, the wheellock had constantly to be wound up, and it was useless if the key was misplaced. The snaphaunce, on the other hand, was set by a simple pull with one's thumb. As another and important advantage, it was now shown that the newer form was less subject to misfires.

The snaphaunce remained in use but a relatively short time, a slightly improved invention, the flintlock, taking its place. This appeared about 1630, but was not used commonly for several generations. Not until 1690, for example, did England discard its wheellock musket in favor of the newer type. In the flintlock, the "steel" was decidedly mobile, and readily admitted the sparks to the priming pan, and the mechanism of the lock was placed inside the lockplate. In the present collection there are few flintlocks: one sees, however (Case 121), an interesting boar rifle, dating from 1750, ornamented with incrusted metals of different colors. Near this is an excellent example of a fowling-piece: this is French



PLATE XLIII
CINQUEDEA, EARLY XVI CENTURY
RIGGS COLLECTION
SEE PAGE 73

and dates from the First Empire. It is said to have been made by order of Napoleon as a gift to Marshal Ney, then Prince de la Moskowa. This is the latest gun represented in the collection.

We need only add that from this time onward the study of gun-making becomes especially complicated: for one thing, numberless examples appear. Their merit from the decorative standpoint is, however, no longer conspicuous, though many of them, like the "Mantons" and "Mortimers," were executed with great technical and even artistic skill. Inventions appear continually, and there are constant mechanical changes. Of these we may mention but one, percussion-locks. These were invented about 1807, but they did not replace the flintlock until after the year 1834. In the latter year, it was demonstrated that the flintlock was relatively ineffective. Thus a test of six thousand shots showed that the flintlock missed fire nearly a thousand times, while the percussion-lock missed only six.

Pistols

Pistols were in use during as long a time, practically, as guns, and they underwent a similar development, both technical and artistic. In the present collection, specimens of the earlier types are alone illustrated. (Plate LI.) European matchlock pistols are almost unknown. Wheellock pistols, on the other hand, are common; they are long both in stock and barrel and, like early pistols generally, often occur in pairs; they were apt to be carried in

holsters and were sometimes used by the horseman, one in each hand. The stock was heavy, both to balance the long barrel and to be used inverted as a mace. Wheellock pistols, in general, illustrate the enrichment of fire-arms which occurred during the sixteenth and seventeenth centuries. A familiar form, the Reiter pistol, with a large and heavy ball-butt, is ornamented usually with inlaid work, in colored and engraved woods, bone, or ivory. Richly decorated examples of early wheellock pistols are seen in Cases 64 and 86. In the second of these, a double-barreled pistol, bearing the arms of Charles V, belonged to the Madrid collection: it is pictured in a sixteenth-century manuscript catalogue of this armory. Another important wheellock (Case 86), signed by Felix Weerder of Zurich, is traced to the collection of Charles I of England. An elaborate pair of holster pistols (Case 103), believed to have belonged to Henry II of France, is from the collection of Count Pourtalès. Some of the early pistols show elaborately sculptured barrels; others have their stocks delicately carved in wood or ivory. Of the latter type is the pair of Dutch wheellocks shown in Case 86, and there is a similar pair of flintlocks in Case 64. Here, also, are several examples of Brescian workmanship, richly executed in steel in the school of Cominazzo.

To be noted in the present collection of pistols is a pair of early Scotch holster wheellock pistols or "dags," dated 1607 (Case 121).

Flintlock pistols are represented in but few in-



PLATE XLIV
SWORDS, XV–XVII CENTURIES
RIGGS AND DE DINO COLLECTIONS
SEE PAGES 67, 68, 73

stances (Case 64). The best of these are Brescian, dating from the early eighteenth century, and French, like those prepared by Le Hollandais, dating from the latter part of this century. In such examples the butts have attained nearly the form of the modern pistol and the size of the arm has become greatly reduced. In earlier types, small wheellock pistols (in the same case) are very rare.

Powder Horns and Primers

Containers for powder (Plate LII) were ever included in the outfit of hunter or musketeer, and in their quality they corresponded to his arms. Horns of cattle, ibex, deer, and chamois were apt to be employed as the basis of these "powder horns" and were frequently richly mounted in metal. In some instances, the containers were boxes, angular, spherical, or pear-shaped, made of wood, ivory, metal, or hardened leather (Case 63). Beautiful examples of these are shown in Case 101. Some of them are elaborately carved in sections of deer antlers, and one is in bronze, gilded, in the shape of the section of deer antler, and contains a compass and a watch. In many cases the metal mountings are beautifully wrought. In some of these "horns" or "pears" the art of the worker in hardened leather is well shown. Especial note should be made of a powder horn dating about 1560, bearing the coat of arms of the Asinière family. The majority of the objects in this case date from the second half of the sixteenth century. Other powder horns or pears are seen in Case 63. Among the most important of

these is a horn dating about 1720, in cut and pressed leather, which is one of the best of its kind. In the same case are numerous primers with or without the spanners, or keys for winding the wheellock. There are also bandoliers (Case 62) which belonged to the guards of the Saxon electors, Christian I (1560–1591) and Christian II. The bandolier is a shoulder strap covered with black velvet, fitted with bronze-gilt clasp and buckles, and hung with a series of containers for cartridges. At that period each load was already made up, containing powder, wadding, and ball, ready to be slipped into the barrel of the harquebus. From such a bandolier slung also containers for bullets or slugs, wads, and priming powder. It may be mentioned that cartridge boxes were also in common use from the late sixteenth century onward (Case 101). These are sometimes richly decorated—embossed, engraved, and gilded. It may also be mentioned that in some instances cartridges were stored away in the butt of the wheellock guns, either at the base, which was covered by a metal flap, or at the side, where a small pocket was present, covered by a sliding lid. In this pocket the musketeer might keep his reserve blocks of pyrites.

K. ARMS AND ARMOR OF THE SEVENTEENTH CENTURY

It was during this century that armor was generally discarded. Even in its earliest years, complete suits of armor were rarely worn. (Plate XXXII.) Both noble and commoner realized that the advantages gained



PLATE XLV

SWORD POMMELS, XV AND EARLY XVI CENTURY

RIGGS COLLECTION

SEE PAGE 68

by wearing armor poorly repaid the discomfort which it cost. Then, too, the great changes which the use of wheellock muskets and pistols brought into actual warfare made it of little practical importance whether the armor was made by an artist-armorer or by a local blacksmith. Hence, armor rapidly lost its interest as an object of art. Its main virtue was based upon the weight of its metal, for head-piece or corselet was to be so constructed as to withstand the impact of a musket-ball at a relatively short distance. Unless, indeed, armor could do this, it had little worth. So it came about that a purchaser or wearer inquired less often how little a harness weighed or how accurately it fitted: he wished rather to know whether it really withstood gunshot. In answer to this question, therefore, the maker would be apt to show at some point of his armor the actual imprint of a test ball. Sometimes, the marks of several bullets would appear on breastplate, backplate, or head-piece. Should, by chance, the armor prove a decorated one, the imprint of the musket-ball would often be drawn ingeniously into a scheme of ornamentation. In Cases 118 and 120 are two half-suits of armor in which these testing marks appear.

In a general way, harnesses of the early years of the seventeenth century resemble those of the last years of the sixteenth. They are, however, made of heavier metal, less carefully finished, and their form is ungainly. The modeling of the armor for the legs is poor, and a series of joints in the ankle region affords movements which in earlier armor were made

possible by the accurate fitting of the plates to the calf and ankle. There are two tendencies apparent in the evolution of armor of this time: the enlargement of the shoulder defenses and the lengthening and widening of the thigh plates. In fact, by the middle of the century, the thigh plates become greatly exaggerated in size. This change was reflected from the fashion in dress, for the thigh defenses were designed to inclose the wide-hipped leg-gear of the period. To accomplish this the tassets merged with the cuissards: in earlier examples the tassets were attached to the banded cuissards by means of turning pegs; in later ones no line of separation remains. So exaggerated did this style become that the wearer was given wide and long hip-armor even at the expense of reducing the corselet: hence arose the short-breasted breastplates of the time of Charles II and James II (Cases 116, 130, 131). This reduction in the size of the corselet tended obviously to make the wearer appear narrow-chested: hence, to restore relative proportions and at the same time to strengthen the corselet, the shoulder guards became greatly enlarged, their sides broadly overlapping back- and breast-plates.

The closed head-piece in the early seventeenth century differs little, save in the weight, from the helmets of the later years of the sixteenth century (Case 117). Burganets, however, increased largely in use, but developed highly specialized forms. Thus, by the middle of the seventeenth century, the back of the burganet, which formerly was shaped closely to the

nape of the neck, flared out behind like the back of a fireman's helmet (Case 129). The ear- or cheek-piece, too, changed in type: it became reduced in size and was usually formed of a single triangular plate. A visor, or buffe, was replaced by a simple bar of steel which was fastened in place in front of the nose. The rudiment of the older visor still appeared, however, in an *umbril*, or forehead plate, which could be rotated slightly up or down, furnished with a flat brim and supporting the nasal guard. Variations in this head-piece are numerous. Some were hat-shaped; some were mere hat-linings, which became lighter and lighter until they were made to fold, when not in use, and slip in one's pocket (Case 129). At the opposite extreme was the miner's helmet which (Case 132) sometimes weighed thirty pounds. This was especially constructed so that a soldier in the trenches could thrust up his head—with moderate safety—within close range of the enemy. In some instances these helmets were so modeled that the openings for the eyes were reduced to holes, and margined above with curious ridges which gave this type of head-piece the appearance of a skull—hence its name "death's head burganet."

During the Thirty Years' War, which ended about the middle of the seventeenth century and was contemporary in part with the Puritan Revolution in England, the use of armor still further declined. Defenses for shoulders and arms were gradually abandoned and there remained only the corselet and

casque. These were the pieces which furnished the regular equipment of a horseman during the reign of Louis XIV. The corselet was straight-waisted, flat in the breast and round in the shoulders, held in place by wide metal-plated shoulder-straps. Several good examples of breastplates dating from this time appear in the collection: one in particular (Case 119) is a corselet of the state guard of Louis XIV; and with this is placed a ceremonial casque and shield made for the *roi soleil* at the Gobelins, and decorated in bronze-gilt, probably by Boulle. This type of armor, it will be recalled, has survived in a few regiments until our own times. Exceptional cases of conservatism are to be noted: officers wore half-armor throughout the second half of the seventeenth century and even during the eighteenth century. This armor, however, was regarded somewhat as a ceremonial uniform: it was poorly executed, the metal was thin, made in sheets which had been rolled into their present thickness, and the corselets and arm-pieces were remarkable rather from their showy rivet heads and varnished colors than from their usefulness. This is the type of armor shown so often in portraits dating from the reign of Louis XV, and even Louis XVI, and it is quite possible that half-suits of it were brought to America by our French allies—for Rochambeau is described in a contemporary poem as "in shining armor clad."

In general, though, regimental armor had quite disappeared by the middle of the eighteenth century. In the armies of Frederick the Great, or in the French



PLATE XLVII
WAR HAMMERS AND MACES, XV AND XVI CENTURIES
RIGGS AND DE DINO COLLECTIONS
SEE PAGE 68

and Indian War and the American Revolution, there remained but a single rudiment of the complete armor of former centuries. This was the little gorget plate (Case 133) which hung by string or ribbon on the officer's breast. Such an ornament one sees, for example, in the earliest portrait of Washington.

Before leaving this theme we should note that the armor of the latest period was as decadent in its type of decoration as in its form or its material. Brightly burnished "white" armor, for one thing, disappeared. Most of the harnesses came to be blackened by a process similar to the modern one of "case hardening." Only rarely one finds (Case 124) the survival of the more ancient blued or russeted harnesses which were so common during the second half of the sixteenth century. The latest harnesses, as we stated above, owed their colors oftener to overlaid varnishes than to the older and time-consuming processes of bluing by heat or by chemicals.

It might finally be remarked that as plate-armor came to be discarded there was redeveloped an armor of leather (Case 116) somewhat after the fashion of the thirteenth and fourteenth centuries. Thus, during the time of Louis XIII or of Cromwell there appeared buff-leather coats with long skirts, which proved to be a serviceable defense against thrusts of sword or pike. Below the buff-coat the legs were protected with heavy jack-boots. The hands were encased with gauntlets which were long-sleeved, reaching quite to the elbow; the earlier ones were steel, the later of buff-leather. It may be noted that

leather defenses for the body were worn regularly even at an earlier period than the middle of the seventeenth century. The *pourpoint* shown in Case 74 dates from 1590. This could have been worn under a peascod breastplate, though as a heavily padded defense it was sometimes worn alone. This we know from portraits of the period, and from the fact that pourpoints were carefully decorated. In the present specimen ornamental needlework is present and bands delicately woven with silver threads.

The arms of the seventeenth century include guns and pistols in notably large proportion, also pikes and halberds. Smaller arms are disappearing, such as maces, war hammers, daggers. Swords alone retain their relative number.

Guns at this time included (Case 121) a variety of harquebuses, musketoons, and hunting rifles. In general, their decoration was poorer in quality than during the earlier century. For one reason, the wars in the seventeenth century had impoverished people generally; the nobility had suffered serious reverses and the rise of the commoner had not yet brought to him a taste for refined luxury in military equipment. Guns and pistols are less elaborate; and powder flasks, primers, and spanners (Case 63) are designed for service rather than display. Pistols (Case 64) appear at this time usually as large holster pieces, notably of the form called "dags," whose heavy butts could be used as maces after the pieces were discharged.

Pole-arms lost much of the elegance of the two pre-



PLATE XLVIII
DAGGERS, XV AND XVI CENTURIES
DE DINO COLLECTION
SEE PAGES 58, 73

ceding centuries. And one has only to compare the elaborate halberds of various forms (Cases 69 and 70) with those on the north wall of the main gallery to realize that the age of luxury in arms had passed away. In general, the pike with its short head and long shaft was taking the place of the large-bladed halberds of earlier times. The second characteristic pole-arm of this period was the partisan, which was a derivative of the "ox-tongue" pole-arm of earlier times; it differed mainly in the greater size of its lateral hooks or lobes; for these sometimes became of large size and their borders developed serrate margins. The last surviving pole-arm was, as already noted, the spontoon, carried by non-commissioned officers, especially between 1700 and 1750. It was a small partisan, the head sometimes only two inches long; it was designed less for service than for ceremony. (See the series in the two stands against the north wall of the main gallery.)

The sword during the seventeenth century (Cases 61, 122, and 125) came to acquire the style of hilt which is familiar to modern soldiers. At the beginning of the century the handle retained the numerous loops, rings, and bands of the sixteenth century, sometimes "swept hilted" with curving supports passing from the pommel end of the knuckle-guard to the region of the base of the blade. From this stage onward, the loop- and ring-shaped supports undergo an interesting evolution, for, passing in review a series of later swords (Case 125), we may see how little by little these elements become transformed.

sometimes with calendars. In such arms the sheath is often a "trousse," containing knives and forks and sometimes special instruments for cutting up the game.

Daggers, as already stated, were in less frequent use. The commonest form was held in the left hand (Cases 82, 125). This type, the *main gauche*, was developed in a special school of fencing where the parrying was aided by the dagger. These arms correspond closely with their swords. They are sometimes provided with irregular or saw-shaped backs which were used for catching and deflecting a sword-blade.

L. HORSE EQUIPMENT DURING THE SIXTEENTH AND SEVENTEENTH CENTURIES

Horses in full panoply, with crupper, peytrel, crinets, and chamfron were, as already noted, common in the first years of the sixteenth century. They were most abundant toward the middle of this century. From that time their use gradually diminished until by the year 1600 horse armor was relatively rare. It was, however, continued until about 1650. The last examples were of poor workmanship, formed of rolled steel, and usually crude in outline and decoration (see equestrian figure at the north end of the main gallery). In the present collection, horse trappings of various types, some richly engraved, etched, and gilded, are seen in Case 83, and in the series of chamfrons hung on the columns of the main hall. The earlier chamfrons were the most complete: they extended well over the nose-region of the horse and were furnished with plates which passed below

the eyes and protected the cheeks. During the last decades of the sixteenth century the chamfron was in some instances so reduced in size that it covered scarcely more than the forehead of the horse (see one of the equestrian figures). Bits and stirrups (Plate LIV), however, seem to have increased in size and become more richly decorated as the horse armor declined. The stirrups of the seventeenth century were of great size, and sometimes bore elaborately pierced ornaments. This, too, became the style in the development of bits: in some instances, they were almost like panels of lacework (Case 128).

Saddles underwent an interesting development. During the sixteenth century the rider was well protected in front and rear by the high pommel and cantle of his saddle. These were usually reinforced with plates of steel and decorated in the same style as the horseman's armor. In general, the saddles were cumbersome affairs, provided with elaborate housing (Case 83), richly mounted in velvet, bordered with fringe, and ornamented with embroidery and galloon. In rare instances, especially in the seventeenth century, the saddles were plated with bone, incised with ornamental borders and scenes, the engraving filled in with black, somewhat in the style of the gun-locks of this period (Case 128).

M. BANNERS

Banners were developed at an early period as aids to recognition. By their means bodies of armored men identified one another at a distance. In later

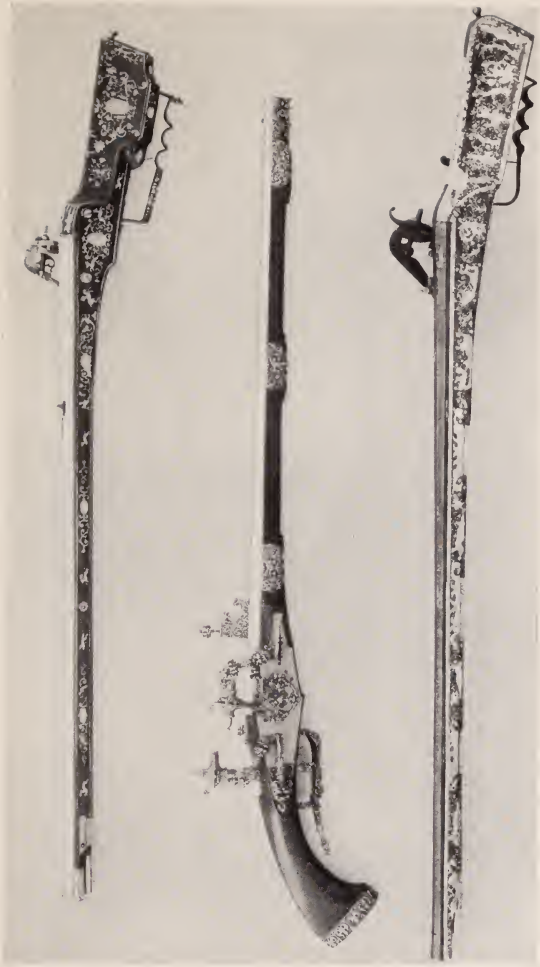


PLATE L

GUNS, XVI AND XVII CENTURIES
RIGGS AND DE DINO COLLECTIONS
SEE PAGES 86, 87

times the banner signified a rallying point, a promoter of safety, and a bond of unity. Hence it became of sentimental importance: it symbolized the family, the clan, or the nation. Ancient banners have in very few instances come down to the present time. The material of which they were made was perishable and many a prized relic of ancient wars has literally fallen into dust. There appear to be no examples extant of the small pennons of the Middle Ages. In Spain, there are preserved several trophies of the Moorish wars (fifteenth century). In the famous Zeughaus at Solothurn is a series of the banners taken by the Confederates from the Burgundians during the late fifteenth century, and in other Swiss cities similar specimens are recorded. Flags dating from the sixteenth century, many of them either in the poorest preservation or so largely restored as to be almost new, are exhibited in various European museums. In well-known collections, seventeenth-century banners are not uncommon, especially those which belonged to guilds and churches; and eighteenth-century banners are preserved abundantly. In a general way, however, banners are among the most difficult objects to collect. For reasons of sentiment they rarely find their way into private hands and still more rarely into the market. When a national banner is sold, it usually passes back to its nation, at any cost.

In the present galleries, the series of banners represented is fairly large, upward of fifty specimens being shown, but it could hardly be called represen-

tative. The most valuable specimen is the small Italian pennon (Case 46) which was presented to Mr. Riggs about 1858 by the Marquis de'Medici of Turin with the record that it had belonged to Pope Leo X (about 1520), whose arms it bears. A part of a fifteenth-century banner is shown in Case 17, which was discovered in a tomb in Valladolid in 1910. It is of linen, bearing in embroidery a blazon and a series of letter S's in black and gold. Still another early banner is carried by an equestrian figure. The remaining objects of this kind in the collection date from the seventeenth and eighteenth centuries. Around the main hall at the tops of the columns one notes:

South Side:

Swiss (or Savoyard) banner, early eighteenth century; Spanish banner, eighteenth century (only a part authentic).

East Side:

Austrian standard, late eighteenth century; Swiss banner, Canton Uri, eighteenth century (restored); Spanish banner, dated 1649; Spanish standard, eighteenth century.

West Side:

Austrian banner, late eighteenth or early nineteenth century; Sienese, eighteenth century; Flemish, dated 1623; Spanish banner, seventeenth century.

North Side:

Venetian banner, eighteenth century; banner showing the arms of the Medici, early eighteenth









PLATE LI

PISTOLS, XVI AND XVII CENTURIES
MAINLY RIGGS COLLECTION

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century, from the Villa Toscana of the former archduke, Johann of Austria.

In the long north gallery the following banners appear:

South Side (beginning from east end):

French, end of eighteenth century; Flemish, seventeenth century; English (?), seventeenth century; Flemish, seventeenth century; Flemish, seventeenth century; Sienese, seventeenth century.

North Side (beginning from the east end):

French, eighteenth century; Spanish, eighteenth century; Swiss (or Savoyard?), eighteenth century; Spanish, eighteenth century; French, eighteenth century; Swiss (or Savoyard?), eighteenth century.

An interesting banner is hung in the corner of the main gallery, near the entrance to the Japanese Armor Hall: it was carried by the guard of Alexander VIII about 1690.

IX

QUESTIONS ABOUT ARMOR: ITS WEIGHT AND SIZE

HOW heavy is a suit of armor? Was it vastly uncomfortable? Was he who wore it smaller or larger than the average man today? Was he stronger than a modern athlete? The visitor to the armor gallery is apt to ask one or all of these questions, which, though of only secondary interest in the matter of art, are well worth answering. Yes, armor was heavy: a complete suit weighed from fifty to a hundred pounds, and a horse would have carried a similar weight in its armor alone. In the best period of workmanship, say 1450 to 1500, a harness weighed least in proportion to the protection it offered. Its plates were graduated in thickness, heavy only at the points most exposed. Still, at the best, it was uncomfortable to wear. Its weight in metal, its linings, paddings, fastenings, together with the underclothing which accompanied it, made it a hampering and heat-retaining costume, which should be worn by a questioner in order to be fully appreciated. Shakespeare, who doubtless knew his theme at first hand, talks of "rich armor worn in heat of



PLATE LII

POWDER HORNS, XVI AND XVII CENTURIES
RIGGS COLLECTION

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day which scalds with safety." But we must admit that most of the heat would come not directly from the sun, but from the oxidizing processes of the wearer; for bright armor reflects heat rays like a polished mirror. And he who stands in front of a hot, open fire and puts his hand on the cool, burnished andirons, will not expect that armor in itself would "heat up" in the sunshine and thus burn the wearer. The trouble was rather that armor did not let the natural heat of the wearer escape by radiation. So he perspired freely—and made the best of it. For the armor gave him such protection in time of need that the rest did not count. To get air for breathing was a serious problem, and records tell us that knights sometimes suffocated in their helmets; for with visor and ventail down breathing was seriously hampered, and a head-piece which could be comfortably worn under average conditions might become dangerous if the wearer were nearly exhausted—when his breathing was rapid and superficial. Then, too, the danger was greater since the head-piece, which was put in place securely for hard service, was sometimes difficult to remove.

In this regard, I recall an incident which is so much to the point that I am tempted to tell it. During the Second Empire, a distinguished collector of armor appeared at the Goupil ball in a complete suit of sixteenth-century armor (the one, by the way, in Case 49). It fitted him admirably, and he wore under it a copy of the clothing which would originally have accompanied it: in a word, his physical

envelopes were accurately "of the period." Therefore, if armor were worn with moderate comfort, it should have been demonstrated in this case, especially since the wearer was then in his prime and in good training. Nevertheless, the armor proved more than burdensome: it seemed to gain steadily in weight as the night wore on, and the difficulty in breathing in a closed helmet became ever greater. To add to his distress, the wearer found at a critical moment that he could not raise his visor—something had gone wrong with the ancient spring-clasp—and he would probably have been overcome, had not a good friend (who by the way was Fortuny, the painter) come to his rescue!

On the other hand, it is probably true that after special training armor can be worn without great effort. Experiments made by the writer convince him that the weight of the suit is distributed in the most logical way. The shoulders bear the weight of arm defenses and casque, the waist supports the corselet and hip guards, and the thighs retain comfortably the leg defenses. One does not realize at first how heavy a weight he is bearing. And his movements are singularly free. He can bend, stoop, drop to his knee, and use his arms quite normally. He realizes then the care with which the early armorer devised the shape and joints of the individual plates so that the greatest latitude of movement could be given, at the same time keeping the elements of the armor close to the body and insuring the maximum protection. If the wearer happens to be a zoölogist,



PLATE LIII

HORSE ARMOR, ABOUT 1560

RIGGS COLLECTION

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he feels safe in suggesting that the ancient maker had closely studied the outward anatomy of certain crustaceans.

Training was certainly necessary if armor was to be borne for hours at a stretch. Thus the mediaeval soldier spread his experience out over considerable time; he began his training during boyhood and literally grew up in his armor. In fact, suits of armor for boys of various sizes are well known—there are no less than five of them in the present gallery. This constant exercise, we may fairly conclude, kept an armored knight lean and active. It is noteworthy indeed how large a proportion of the harnesses which have come down to us are made for men with narrow waists; some are surprisingly slender, but to compensate for this the shoulders seem to have been of ample width. Thin legs and small ankles were common among wearers of armor, in numbers which today seem unusual.

As to the size of the men who wore armor, my conclusion is, after measuring fifty or more harnesses, that the average size of the man of middle or higher class (for few owned armor who were not fairly well-to-do) was smaller in the fifteenth and sixteenth centuries than it is today. But the answer to this question is not a simple one. If the armor studied were all from a single country, the problem would be easier. It is certainly unfair to generalize about the increased size of modern Englishmen from data concerning sixteenth-century Spaniards. Then, too, as Lord Dillon, long time director of the Tower armories,

points out, it is difficult to estimate the height of the man who wore the armor since it is always fair to assume that the armor about the hips may have been worn higher or lower, and this would make possible a margin of error of several inches if we attempt to estimate the height of a person from the measurements of his armor.

Let us grant that the wearer of ancient armor was a smaller man, lean and active: was he proportionately stronger than a young officer today? This again is a question which cannot be answered precisely. We believe that he would do in his armor what few modern athletes could, without special training. And we are convinced that he stood the strain longer and under greater mental and physical stress, but only on account of his experience. It is clear from statistics, at least as far back as statistics take us, that modern muscular effort, not to consider mental, is on the average the stronger. The revival of international athletic games has brought out clearly that the modern prizeman breaks earlier records, even in throwing the discus or casting a javelin. Still, it would be interesting to see if today the average officer, English, Spanish, or German, could vault over his charger if he were weighed down with armor. Their predecessors in the fifteenth and sixteenth centuries are said to have been able to do this, but, alas, there was no Galton in those days to record precisely what proportion of the officers were successfully trained!



PLATE LIV

STIRRUPS, XVI AND XVII CENTURIES

RIGGS COLLECTION

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X

JAPANESE ARMS AND ARMOR

JAPAN is hardly second to Europe in furnishing artistic examples of Armor and Arms. They are more accessible, for one thing; for while the work of the European armorer virtually ended over two centuries ago, armor was used in Japan until about 1868, when the ancient feudal régime came to its end. For this reason, in part—that is, since Japanese armor still lingers in considerable quantity, and more or less in its original surroundings—we may examine it from many points of view. We may learn how it was made and worn, how it was tested, preserved, repaired, decorated, how it was treasured, what was its significance in the community and upon its wearers—its cult, so to speak. In a word, we may know arms and armor today in Japan much as we might have known them in Europe had we lived two centuries ago, in spite of the fact that in Japan the newer culture ruthlessly cut away many links which bound them to earlier times. Young Japan, indeed, took no pains to preserve armor and arms, still less to record at first hand the great body of ancient mili-

tary precepts; and with complete change of interest the sons of samurai grew up, knowing nothing of the training in technical matters which their fathers and grandfathers regarded as of real, even vital importance. I remember meeting in Japan a nobleman, who was a daimyo, *de jure*, of the highest class, whose forebears included some of the most distinguished personages in the ancient wars of Japan, and whose father, he told me, had borne armor, but who himself knew as little about it as though it had become extinct centuries ago. I met samurai who did not know the manner of wearing the swords of their fathers, who in their day would probably have committed suicide, as a ceremonial duty, had their military equipment been officially criticized. So quickly does the memory of details die. In fact, even a few years ago one could have recorded interesting facts and traditions which today are gone forever. In Japan, in 1900, I found there were still living several armorers, including a member of the historical family of Miochin, all of whom had made harnesses for service: when I revisited Japan five years later these artists had died, and their families, who were poor, had already sold for a trifle the old sketches, implements, and books.

At that time suits of armor were found in nearly every curio-shop, but they were usually of late period and of poor quality. Thus in one shop several hundred suits were examined, but none were found to be worth purchasing. Good armor was rare, and had been rare for several decades; when exceptional ob-

jects came into the market they were bought up eagerly by the few amateurs.

In a general way it is well recognized by the Japanese that armor for many centuries proved an excellent groundwork for the expression of their art. Thus it provides some of the best examples of their metalwork, whether in steel, bronze, or gold; and for its mountings it introduces some of the most beautiful textiles, in damasks, cloth of gold, and braids, and with these decorated leather of great merit, perhaps the best of its kind. Armor, too, has ever been a medium for illustrating heraldry,[1] and it teaches hardly in less degree the symbolism and religion of ancient Japan. In another direction, unfortunately less interesting to the average museum visitor, the armor and arms of Japan give important data as to the origin and development of the culture of Eastern Asia, and as to the relationships of its peoples.

In spite of these attractions, all must admit that the objects in this field, armor especially, have as yet been given but little attention by western scholars and by lovers of Japanese art. But they will also admit that they have seen few examples important enough really to interest them. Nevertheless, Japanese sword-guards and swords are to be seen in almost every city in the world, but there are few among them which rank even in the second class. Arrow-points and lances there are in plenty, almost

[1] Note the *mon* (crests) on the ceiling of the Japanese Gallery and compare the explanatory plate, No. LX.

everywhere, and Japanese suits of armor by the score —of late date, mainly after 1750, and usually of poor or uninteresting workmanship. In spite of the abundance of these objects as a class, relatively few examples of the best quality seem to have found their way out of Japan. It is safe, indeed, to say that, even today, these objects can be understood to good advantage only in Japan, since here one finds both the material for study and those who have carefully studied it. The most valuable collections are exhibited in the Imperial museums in Tokyo (both at Ueno Park and at Yushiu-Kwan), Kyoto, and Nara. There are also a few interesting specimens at the School of Fine Arts (Bizitsu-In) in Tokyo. But many of the most remarkable and earliest objects are preserved in the storehouses of temples, Buddhist or Shinto, scattered widely throughout Japan. Such, for example, are found at Nikko, Miyanoshita, Matsushima, Yamada (Futami), Chyusonji, Yoshino, Koyasan, Kyoto, Kasuga (Nara), Sendai, Itsukushima, Kagoshima, and especially at the ancient Shinto shrine of Omishima. Here in a little island in the inland sea are still large numbers of harnesses and arms dating between 1200 and 1500, which were preserved as *ex votos*. Late arms and armor of excellent quality can be seen, by the courtesy of their owners, among the treasures of princely families, e. g., Daté, Ikeda, Maida, Tokugawa, and Uesugi. Private collections are numerous and valuable, especially in Tokyo and Kyoto, but few of them are representative.

For our present review we may consider under distinct headings:

A Armor
B Swords (and sword-guards) and Daggers
C Pole-arms
D Bows and Arrows
E Guns, Pistols, and Cannon
F Horse Armor

A. JAPANESE ARMOR

At first glance Japanese armor seems as distinct from European as the East is from the West; in fact, this is what one might have predicted without having seen the armor, guided merely by the general principle that, from our point of view, the Japanese do everything by opposites. Thus their armor is light, loose-fitting, with wide shoulder pieces, separate and dangling skirts, and a broad neck defense; it is bright colored, wonderfully tissued with silken braids and cords, and set off with leather stamped in many tones. In Europe, on the contrary, armor is twice or thrice as heavy as Japanese, fastened with plain, dull straps, close-fitting and usually of uncolored steel. In our present exhibition the contrast strikes us so sharply as we pass out of the European gallery that we may well query what has caused the difference in type.

We find, as a partial explanation, that the Japanese harness is an instance of "arrested development"—for the rulers of Japan were for centuries conservative; they venerated the past and maintained its military customs even minutely. To them the golden

age in heroism, not to mention that in beautiful arts, dated six to eight centuries ago. The armor of that age was the best that had been made, and never, they agreed, had better use been made of it than between the days of Yoshitsuné and of Nitta Yoshisada. The early art of war which developed the longbow, long-spear, and long-sword was quite modern enough, and such devices as guns or heavy armor in the European style were looked upon with disfavor. So while changes *did* occur, they were apt to be in details of equipment rather than in essentials. Indeed, it is clear that the type of Japanese armor could not have remained long unmodified if certain European arms, such as the war axe, morgenstern, or mace, had been largely used. Somewhat analogous forms occurred, it is true, during different periods, but their use seems to have been generally discouraged. The local horse, too, seems to have helped to maintain the armor in its early fashion. For it was small in size, like many insular animals, and was incapable of carrying the heavy-armed European knight —its temper, too, appears to have been quite irregular, and a rider, even without cumbersome panoply, had sometimes enough to do to manage it. Then, too, the fashion of fighting, which was maintained conservatively, made light and very flexible armor the more necessary: this hampered its wearer as little as possible in the use of the noble arms; it allowed him intense activity; it did not even concede him a shield as an excuse for slower movements. This armor was, in short, the best defensive costume which

the adroit Japanese could devise against the use of sabre, spear, and arrow. Hence it developed as a deftly woven complex of steel plates, leather splints, and chain-mail held together by rawhide and silk. It was, in a word, reminiscent of the panoply which Europe had devised during the twelfth, thirteenth, and early fourteenth centuries, when knights wore banded mail, ailettes, and cuir-bouilli.

Earliest Arms and Armor

Much has been learned of the earliest military equipment through the archaeological studies of the past three decades. During this time the Japanese governmental experts have explored numerous tumuli and their findings are constantly being published and analyzed. Their results show clearly that the earliest arms fall into at least three groups: (1) aboriginal, which is largely Ainu, a race represented today only in scattered villages in the northern island of Japan, (2) Malayan, and (3) Chinese-Korean. The Ainu element includes to a large degree the Stone Age finds (Case O. 1), which illustrate celts, arrow-points, and war-hammers. The Malayan element left its type of ornament upon early swords and spears, while it developed such military customs as tattooing and head hunting—in this regard we may mention that the Japanese war saddle of a few generations ago retained the loops from which the heads of the enemy were to be hung. The Chinese-Korean element produced the padded garments and helmets of cloth, the type of which survives in the costume of the temple dance,

bungakuodori (note the head-dress in Case O. 7); also in jazerans of metal plates (Case O. 1) and in halberds. And upon these various foundations the Japanese built up their national equipment. This was already differentiated both in bronze and iron by the seventh century A.D., as numerous "documents" indicate. Especially illuminating upon this point are the pottery figures, *tsuchi-ningyo* (Case O. 2), which are found in numbers on tumuli as substitutes for human sacrifices. Thus we may picture (Plate LV) a Japanese warrior of 600 A.D., or even earlier, as bearing a corselet made up of iron plates riveted together, a longish casque with a brow peak, built up of radial bands of iron, apron-like thigh defenses, wide shoulder guards (probably of leather), and leathern arm defenses. He carried a longbow. His sword was long, straight, single-edged, having a pear-shaped pommel and an ovate guard. He sometimes carried short sword and dagger, with inconspicuous guard and pommel (see the objects in Cases O. 2 and O. 3). It may be noted that the heavy corselet of this period opened at the side, a large plate becoming detached, thus leaving a space through which the body of the wearer could be admitted. This plate survived always as the *watagami* in armor of the princely class (see this element in the armor in Cases O. 4 and O. 10).

In general, however, Japanese armor has ever been built up of scales. In the Bronze Age and Early Iron Age, jazerans (p. 25) were worn, in which the scales were laced together at their sides. By this procedure,



PLATE LV

JAPANESE ARMOR
VII CENTURY (OR EARLIER)

SEE PAGE 120

they were arranged in bands or rows—somewhat as we have seen them in Roman harnesses. And these rows were next hung one above the other by cords of doeskin, cotton, or silk. This type of armor was in general use by the eleventh century. And the equipment of this period we can the better understand since specimens have been preserved in Japan which still exhibit the various trappings. The best of these specimens, dating from the Fujiwara period (roundly 800–1100 A.D.), is unquestionably the one preserved in the Shinto temple of Sugata-no-Miya. (Plate LVI.) Its scales, one of which is exhibited in Case O. 2, are large, made of heavy lacquered rawhide. Its breast defense is covered with stamped leather; it has four wide, apron-like hip- and thigh-defenses; its shoulders are covered by square shield-like elements, or *sodé*. Its helmet has a huge neck guard, the bands of which roll outward in the ear region, protecting the face at the sides; the bowl of the helmet is heavy, made up of about eight radial elements: as an ornament two leaf-shaped plates arise in the region of the forehead, like horns, or antennae.

From this time onward few essential changes appear in Japanese armor. Thus in the next, or the Kamakura period (1100–1336), as we know both from contemporary drawings and from actual harnesses, the ceremonial armor (*o-yoroi*) differed little from the example just described. In the present collection this may be noted (Case O. 4, Plate LVII) in a remarkably preserved specimen, apparently the only unrestored one of its kind, which came to light in the

province of Tamba some years ago. Its main structural difference from the earlier harness is in its smaller scales, or laminae, in their greater compactness, and in the fact that they are alternately leather and iron, instead of being made of rawhide only.

Other classes of armor at this period do not differ widely from the o-yoroi. It is even probable that as such they existed in Fujiwara times, judging from the drawings in a famous manuscript (now in the possession of Prince Sakai, the *Ban-dai-nagonsoshi*) which probably dates from 1000 A.D. These harnesses, worn by people of lower rank, had a greater number of apron-like thigh plates than four, i. e., six, eight, even a dozen; some of the corselets opened at the side (*do-maru*), others down the back (*haramaki*), both types apparently of the same early date. Those in the present collection (Cases O. 3, 5, 6, 7, 8) are mainly from the collection of the late Professor Chitora Kawasaki of the Art School in Tokyo. Helmets in the Kamakura period are generally similar to those of the two earlier centuries: their iron top, or bowl, was made up of radial plates, sometimes studded with large rivet-heads; the neck guard was wide and its sides were rolled over as huge ear-pieces, though not to such a degree as in earlier examples. The leaf-shaped ornaments on the brow plate sometimes develop extraordinary length during this period. The arm defenses are sleeves of cloth reinforced with several large, flat plates, held together with mail. On the legs the loose trouser-like coverings are reinforced with rows of scales, and the shin



PLATE LVI

JAPANESE ARMOR, X OR XI CENTURY
FROM TEMPLE SUGATA-NO-MIYA

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region is protected with wide greaves which in horseman's armor develop great defenses which project upward and backward, so as to protect the knees. Toward the end of this period the rows of scales composing the armor were in some cases replaced with solid bands of iron, giving the type of harness shown in Case O. 13. This shows also the early mask which was developed as a defense for the face, resembling the early European beaver (p. 49), rather than the visor, which, we recall, articulated with the helmet.

In the next period, that of the Ashikaga shoguns, between 1336 and 1600, armor developed a great variety of forms. Some of them are seen in the present gallery (Cases O. 14, 15, 16). In a general way, the highest types of armor were conservative, the commonest were progressive. Thus an o-yoroi during Ashikaga times (Plate LVIII) might be confused with a Kamakura harness: so also the do-maru and haramaki were worn. But now appeared, especially in the later years, corselets made of larger plates. Helmet bowls were built up of a greater number of radial pieces, or were formed in many irregular shapes, like fruit, shells, or head-dresses (Cases O. 44 and 45). The neck defenses were smaller and the ear "tabs" greatly reduced. Masks also appeared in various forms suggesting the faces of monkeys, goblins, swallows, also human faces, young and old, women's as well as men's (Case O. 11). At this period, too, chain-mail was more frequently used in the defenses of legs and arms. Finally, in the greater use of metal in the exposed parts of the armor there arose a new type of

decorative treatment: inlays and overlays of precious metals appear, and the beginnings of embossed armor. From this time dates some of the extant work of the Miochin family of artist-armorers, whose generations extend back, in more or less historical continuity, to the thirteenth century.

During the Tokugawa period (1600–1868) Japanese armor became decadent and finally went out of use. This was a time of peace, but it was an armed peace which the shoguns safeguarded by the most carefully planned feudal measures which the world has seen. They made it a rule, for one thing, as a means of keeping the "units" of the empire in close touch with the government, that each governor or daimyo should leave his province at stated periods and make his headquarters at the capital, Tokyo, or Yedo, as it was then called. This rule was strictly enforced for over two centuries and one can easily understand what an influence it exerted in the development of arms and armor, since it focused upon them the attention of everybody; for, summer or winter, early and late, all roads in Japan, leading to or from Yedo, were apt to be thronged with processions in which one saw armored men of every degree, ceremonial guards, brightly caparisoned stallions (Case O. 38), long spears with ornamental heads, shafts, and sheaths (wall trophies), waving banners of many colors, bearing crests and devices (racks on east wall), and long files of retainers, whose harnesses were covered with bright surcoats (*jim-bauri*, framed on south wall) and who wore as helmets flattish head-pieces



PLATE LVII

JAPANESE ARMOR, ABOUT 1200

DEAN COLLECTION

SEE PAGE 121

(*jingasa*, on west wall). The times, in a word, favored display, and armor became developed in a thousand different ways. Variations appeared even in details: each province produced its fashion in colors, forms, tissues, kinds of metalwork and lacquer. And, complicating the situation even more, the styles changed constantly. The armorer, accordingly, took upon him more and more the functions of a court costumer. And as his work was rarely expected to stand the test of actual battle, he naturally economized in the quality of his metalwork, which was his costliest item, and was lavish in lacquer, bright braids, and helmet ornaments (Cases O. 26–28, 32–35). Where he attempted work of costliest type, as in embossing, his results were decadent (see harness by Miochin Munéchika, Case O. 17). His wealthy patrons favored intricate designs, overlays of precious metals, sometimes in a fanciful taste, which suggests a parallel with the rococo of the Europe of those days. Sometimes, too, a Japanese daimyo, like the seigneur of the court of Louis XIV, would wear a "fortune on his back," and such princely suits of armor have even today maintained in Tokyo or Kyoto a price so high that few of them have ever found their way out of Japan (Cases O. 22, 9, sleeves). In general, however, armor under the Tokugawa shoguns was light, cheaply made, and showy. And at this time, especially from 1750 to 1850, great numbers of suits were made and are still preserved. In fact, nearly all the Japanese armor exhibited in shops and museums dates from this time—in as

large a proportion, perhaps, as nine examples out of ten.

Some of the features which appear in armor of this period are helmets with small ear pieces, with close-fitting neck defense, and with bowl made up of many radial splints—there are over a hundred in a specimen in Case O. 11; shoulder defenses and apron-like thigh guards, small, often strengthened with single plates; armor for legs and arms, light and flexible, largely made up of chain-mail. But in these matters one can set down no general rules, for the suits of high grade are conservative, and corselets and head-pieces still appear which resemble the armor of Kamakura times (Case O. 10). Only by decadent workmanship and by study of details does one see that they are of quite modern make. Some of these features are shown even in early Tokugawa times, as in the harness of Daté Masamuné[1] (died 1636) of Sendai (Plate LIX), which appears as his effigy in the memorial temple at Matsushima. In this example it is interesting to note that the heavy plastron suggests a European model.

It was, as a matter of fact, during Prince Daté's time that European influence was making itself strongly felt. Portuguese traders were visiting certain ports, missionaries had made vast numbers of converts, and the Dutch were opening a "factory" near Nagasaki. So it is not surprising that European

[1] This prince was a formidable rival of the Tokugawa, and perhaps the most brilliantly cultured Japanese of his day; he was litterateur, engineer, artist, general, diplomat. In the last regard he is remembered as having sent a mission to Spain and Rome.



PLATE LVIII

JAPANESE ARMOR, ASHIKAGA PERIOD
XIV CENTURY
FROM KOSUGA TEMPLE, NARA

SEE PAGE 123

arms and armor were imported, and that bits of Dutch red felt and stamped leather begin to appear in Japanese equipments. The Japanese were, *au fond*, just as enterprising then as today: in this particular matter we know that they appreciated the technical excellence of European armor and were quite capable of changing their entire system of warfare had the shoguns permitted it. They knew, for example, that the "foreign iron" (*nam-ban tetsu*) was better than the Japanese (for they liked to test it with musket-ball), just as they knew that foreign sword-blades were inferior to their own. And they adopted as much of the western fashion as suited their needs. They bought eagerly European cabassets and morions and adapted them to their styles (Cases O. 44, 45), transferring the plume-holder from the back of the cabasset to the front. They evidently appreciated the virtues of the European peascod corselet, which they called "pigeon-breasted" (*hato-muné*), for they used and copied it frequently (middle panoply, west wall).

From this period date many Japanese books and manuscripts on armor, and the reader who is interested may find in them how armor was worn, and what was the meaning of the various "crests," shaped as suns and moons, shells, plants, horns and monstrous animals.

B. JAPANESE SWORDS

It is difficult for a foreigner to understand how an old-time Japanese venerated his sword. His feeling

toward it was a part of his cult, sentimental, religious, ethical, somewhat like that of a knight of the early Middle Ages, who named his sword, personified it, and expected it in some mysterious way to give him "signs," or to leap out of the sheath and bury itself in his enemy. Even today a Japanese gentleman of the old school is not apt to talk of his swords, much less to show them: if he can be persuaded to bring them out, it is a sign that the visitor is accepted as an intimate friend. A sword is carried into the room in silken wrappings, sometimes in its ancient lacquered box, and is unwrapped with no little care. It is usually protected with a simple wooden sheath and with a plain wooden handle. Its owner will pass it with due ceremony to the visitor, who receives it in both hands, which are held palm upward. He must handle it reverently, ask permission to see the blade, and when this is given, slowly draw it from its sheath, examining the steel inch by inch as it appears, but he must always take pains to hold the razor-like edge toward himself. When the blade is nearly exposed, he must again obtain permission if he would see the point—for etiquette does not prescribe drawing a sword in the house of a friend. Of course the blade is not touched with the visitor's bare hand: he produces at the right moment his mulberry-fiber handkerchief, in which the blade may be handled.

The blade of the sword is the prized possession. It was the "soul" of the ancient samurai, as the shogun Iëyasŭ said; it typified his honor; and one



PLATE LIX

ARMOR OF THE EARLY TOKUGAWA PERIOD, ABOUT 1630
FROM EFFIGY OF DATÉ MASAMUNÉ (SENDAI)

SEE PAGE 126

may learn with what ceremonies it was made, tested, acquired, used, inherited. Its makers were among the greatest artists of Japan, and authentic blades of well-known masters were ever and are sold for prices which, even today, the wealthiest foreigner usually declines to pay. To know the names of the celebrated sword-artists and their work was a part of the regular training of the samurai. And the study is so difficult that few, indeed, there are today who have mastered it. Thus a great expert in Tokyo, high in the sword society (To-Ken Kwai) there, declares that no one should buy a blade who has not studied the best examples throughout Japan for at least ten years! It appears that the works of famous makers were copied and signed fraudulently even in ancient times—almost in the years when the masters themselves were living. Among the famous sword-artists one recalls the names of Norimuné (twelfth century), Masamuné and Yoshimitsŭ (thirteenth century), and Muramasa (fourteenth century), whose blades thirsted for blood, and should not, as a means of preventing accident, be entirely drawn from the scabbard! In Case O. 40 are examples of these artists' works which are believed to be authentic: they have been borrowed from the collection of Professor Frederick M. Pedersen. Especially beautiful is the texture of the blade, which is characteristic for each master, sometimes recognized by lines of slag in the metal, or by the peculiar wavy line (*yakiba*) formed in tempering, where the steel margin of the blade joins the iron back, or core. Some-

times there is a wavy texture in the layers of steel of different colors throughout the blade, in the style widely known to Europeans from its development in Damascus. (See p. 140.)

Kinds of Swords

There are three well-defined kinds of Japanese swords: the long sword (*katana*), the short sword (*wakizashi*), and the dagger-sword (*tanto*)—types shown with numerous examples in Case O. 42. Each is single-edged, slightly curved, or sabre-like, and all are similar in manner of mounting. The long and short swords together form the familiar pair of swords (*daisho*), carried (until 1877) by all Japanese of the military caste. The longer was the fighting sword, the shorter was used as a supplemental arm, or in the supreme distress of its owner, for ceremonial suicide (*hara-kiri*), although in the latter rite the dagger-sword (*tanto*) was given the preference, at least during the last centuries. The mountings of the swords when carried as a pair were often alike, and everyone who collects sword furniture recalls the sets of "twin" sword-guards and similar objects, which have been offered him for purchase. The dagger-sword is usually without a guard and is so small that it can be carried concealed. Additional types of swords are known, but they are relatively rare. Thus, the long sword of a daimyo usually has a slender blade and is mounted in the ancient hanging style (*tachi*). Two-edged swords are also known, some quite primitive in form but often of late date (Case O. 40). So, too,

eccentric types are described which were carried singly by Japanese of the artistic or professional classes: a physician, for example, carried a short sword which either lacked a metal blade or had one of a type which could not well be used.

Sword Furniture

Every samurai household is still apt to have tucked away in the storeroom a box made up like a nest of shallow trays, containing sword "furniture," or the various trappings with which the family sword-blades were mounted. Such a box contains disk-shaped sword-guards (*tsuba*) and other metal mountings of the hilt, such as the ferrule-like pommels (*kashira*), ring-bands (*fuchi*), and ornate peg-heads (*menuki*) which attach the blade to the handle. Here also are small "paper knives" (*kozuka*) having flat, decorated handles, and skewers (*kogai*), the latter serving as hair pins. Both were tucked into the sides of the sword-sheath. The kozuka could be thrown with great precision and it is said to have been a formidable weapon, readily striking a mark, e. g., the eye-hole of an armor-mask, at a range of ten feet. The kogai, or skewer, it may be remarked, had a curious function: it was left with a slain enemy as a mark of identification, and later thrust into the ear-hole of the severed head, to serve as a handle in carrying the trophy. Occasionally the kogai is formed of halves and could be used as chop-sticks (*hashi*), not however for knife and fork, but as ceremonial tweezers, to handle ashes or incense.

Sword mountings played an important part in the training of the Japanese of the highest classes. They formed a part of his daily life, they were frequently changed, and wealthy men are said to have had sufficient "stock" in reserve to allow favorite swords to appear in different dress each day in the year. It is not surprising, therefore, that the best artists were employed to design and execute them and that their decorative treatment should be developed differently at different times and in various parts of Japan. There grew up a vast lore as to sword furniture, and families of tsuba artists rose and flourished. Every young samurai knew the names of some of these artists and the character of their work. He knew that Nobouïyé and the Kaneïyé made the most beautiful iron guards; that the Goto were famous for their tsuba showing golden lions or dragons; that the Kinai pierced their guards sharply with crests, flowers, leaves, and fruit. And the fame of these artists remained not alone at home: when Japan was opened to foreign commerce, Europeans and Americans collected their works eagerly. In New York, for example, there are now several representative collections, one of which, that of Mrs. Adrian H. Joline, has recently been presented to the Metropolitan Museum (Case O. 43).

C. POLE-ARMS

The Japanese were artists in the use of the spear. One can form an idea of the popularity of this arm when he notes how many spear-racks are still present

in Japanese houses and discovers how many manuals for the use of fencing with the spear can still be picked up in local bookstalls. The Japanese did not, however, develop the great variety in pole-arms which is known in Europe. The typical form was a spear having a stout, long head, quadrangular in section, ending somewhat bluntly. A second type was vaguely halberd-like, having a somewhat cross-shaped head. A third had a sword-shaped blade, or *naginata* (in the use of which women were sometimes trained). And a fourth was a ponderous wide-bladed affair which suggests less a pole-arm than the double-handed sword of Europe. Slight variants occur in these types, but in a general way they include practically all pole-arms in use in Japan for over eight centuries (see rack on west wall). In this list, however, one does not consider the "halberds," Chinese in type, having hooks, neck-rings, and the like; for these may be looked upon as exotic. These forms were sometimes seen in racks in the gate house of a daimyo's palace.

Japanese long-spears were beautiful weapons both in design and workmanship. The heads were fashioned with the same precision as sword-blades and were as carefully signed by their makers, respecting whom there is a considerable literature. The shafts are models of strength and lightness. Made of hard wood of many kinds, they have excellent grips, and are finished with lashings in the Malayan style and with ferrules sometimes richly ornamented. It can safely be said that nowhere in Europe was known

this degree of refinement in the mounting of pole-arms.

D. BOWS AND ARROWS

The bow is an arm which for centuries appealed strongly to the Japanese temper. It required dexterous arm muscles, keen sight, and quick judgment, well suited to an art-loving race. It was found in the hands of all Japanese, prince and peasant, old and young. In course of time it became modified in form and use in many directions; all manner of bows were known, some small and delicate for short range, fashioned as instruments of precision, some large and heavy, suited for throwing heavy arrows great distances (see rack on north wall). They were made of a great variety of elastic materials, and were "lashed" in many ways and elaborately. Their shape when strung showed wide differences; some bows were boldly crescentic, others irregular; a common form was much longer and more widely curved above the "arrow line," so that the archer, holding the shorter end of the bow downward, could have the advantage of a bow of the greatest length recorded. In a word, the Japanese as bowmen were certainly unrivaled in recent centuries, and were probably more skilful, so far as can be judged from early records, than the Turkish archers of the fifteenth century or the English of the fourteenth. It is interesting, on the other hand, that they never developed the use of the crossbow. This arm occasionally occurs, it is true, but a really serviceable example is unknown from Japan. In the present collection a single cross-

bow is represented, but it is rather Chinese in form than Japanese. It is a "magazine" or repeating type, provided with a lever which drew the bow and pushed the bolts into place in rapid succession (Case O. 12).

With the development of the bow the arrow underwent a series of extraordinary changes. In fact, in no other country are there so many varieties of arrows. Even from prehistoric times they were fashioned for the most varied purposes, ranges, and wind-conditions. As objects of art, moreover, they were given great attention. The heads, especially, show beautiful forms, elaborate designs, and exquisite workmanship: some are pierced boldly, others are a lacework of steel, others again are marvels of chisel work, carved with flowers, dragons, or gods. In the field of arrow-points (*yano-ne*) there exists an extensive Japanese literature (Case O. 41).

It is not unnatural that there should have appeared at the same time a series of archer's accessories. Quivers were made in many forms (panoply on north wall), some box-like, others like racks, others still like baskets beautifully woven. So, too, there were exquisite reels, formed of twisted or plaited bamboo, in which the archer coiled his additional bowstrings. Then there were archer's gloves in profusion, some of them excellent examples of work in stamped leather (Case O. 12).

E. GUNS, PISTOLS, AND CANNON

The use of gunpowder was never developed broadly in Japan, for one reason, doubtless, since fire-arms

were not given a high place in feudal warfare. Guns were in common use, it is true, during the century preceding the formal opening of the country to foreign commerce, but these arms followed the style of the matchlock which was introduced in Japan by the Portuguese navigators of the sixteenth century. In the various guns (Case O. 12) which are known from Japan, details may differ, as in proportion, ornaments, weight of barrel, but the general plan is ever the same. After the expedition of Commodore Perry (1853), however, new types appeared, such as revolvers, including both guns and pistols, some keeping the matchlocks, others introducing percussion caps. In many instances, they became eccentric in fashions. Thus barrels were formed of coils of wire.

Cannon in Japan were heavy in outline, copied evidently from the forms introduced by Europeans during the seventeenth and eighteenth centuries.

F. HORSE ARMOR

Japanese warfare must have proved fatal to horses, for their cavalry was in constant use, arrows were shot in clouds, and the horses were unarmored. Not until the Tokugawa period when warfare practically ceased was the horse given adequate armor. In earlier times horse frontals appeared and heavy trappings of silk, although the latter could hardly have been of great value as a defense. In Tokugawa times, however, when parades were constant, horse trappings formed a splendid medium for display. Housings were common, to be compared in a general

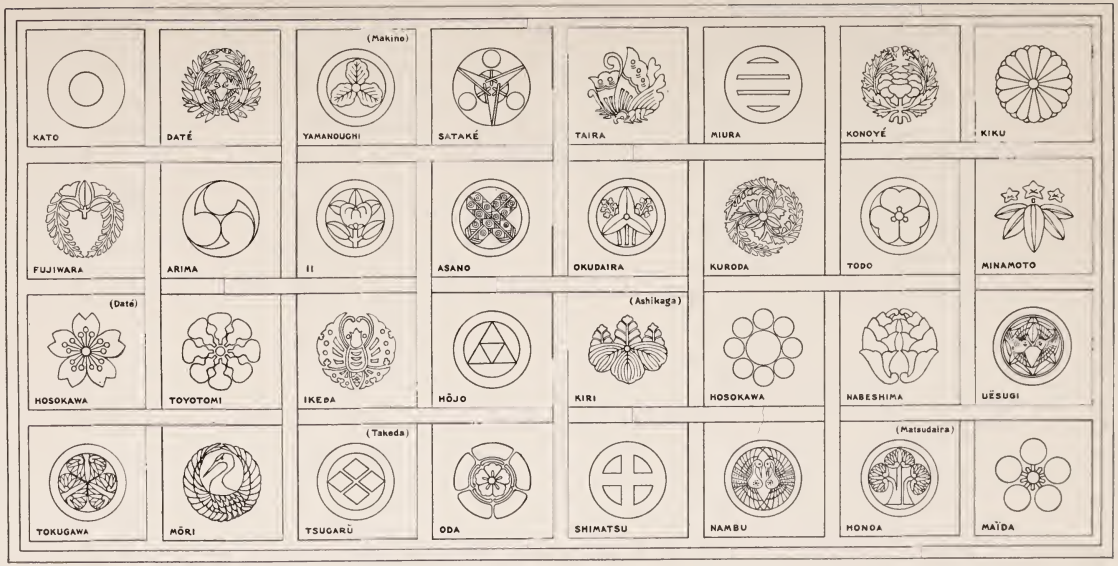


PLATE LX

CRESTS OF DISTINGUISHED JAPANESE FAMILIES
(DIAGRAM OF CEILING)

SEE PAGES 11, 115

way with the neck-, chest-, and rump-defenses of the European horse. They were made up of squares or scales formed of hardened leather or of steel, and were often brightly colored, gilded, silvered, or lacquered in red and black (Cases O. 36 and 37, and panoplies on north wall). Horse frontals, too, were in constant use, these sometimes shaped as the faces of monsters, splendid with feelers and crests. Japanese saddles (Cases O. 36, 37, 41) are well known in art museums everywhere. They are usually decorated lavishly. In general, they are of Chinese form, but they are sometimes small and lightly modeled, suggesting the compact wooden army saddle of our western troopers. Japanese stirrups, like the saddles, are often richly ornamented. From early times they developed their typical crescentic form, without sides, which was found eminently practical. They were heavy, were not "lost" as readily as the western stirrup, and could not catch the foot of the rider and drag him along, as sometimes happens with the European stirrup. In the present collection (Case O. 41) the earliest saddle dates from late Kamakura or early Ashikaga times, resembling closely a specimen preserved in the museum in Kyoto. An idea of the ceremonial trappings of the Japanese horse may be had by examining the model of a horse bearing its equipment, prepared about 1780 by order of a daimyo of Inaba.

XI

ARMS AND ARMOR OF THE EAST

Arab (Saracenic), Turkish, Persian, Indian, Chinese

"Il y en a, il y en a eu, il y en aura toujours." Carrand père

WHEN, sixty years ago, Mr. Riggs's preceptor declared, "There are Oriental arms, there ever have been, and there always will be," he showed an old-fashioned collector's disdain for whatever was Asiatic. He knew that armor was still being made in that no man's land where the West disappears in the East, where artists are working in the same places, and with the same patient methods which they used when the Crusades were young. Carrand, together with his collector-friends, could not appreciate these Oriental objects and did not wish to study them; still he realized in a way their position with respect to European arms—the latter were progressive, the former conservative. If one wished to understand details, Carrand admitted, let him go to the East (*"cherchez toujours l'Orient"*). Thus, if one sees tomb-figures in Europe showing curious mail, like the banded









PLATE LXI

HISPANO-ARAB SWORD, END OF XV CENTURY
TURKISH CASQUES, XV AND XVI CENTURIES
DE DINO COLLECTION

SEE PAGES 12, 142, 144

mail of fourteenth-century crusaders, he can understand how it was made and worn by examining the mail of Turkey, Persia, or India. In fact, practices in armor-making extinct in Europe can be explained today only by visits to the few surviving armor-makers in these countries.

In Carrand's day Oriental armor and arms were to be found everywhere; the shops of Paris and London were stocked with admirable specimens dating from many periods. A vessel ballasted from the ancient storehouse in Constantinople had brought to Europe hundreds of head-pieces of janissaries and piles of their "saucepan-lid" breastplates, and had made them a drug in the market. Even today one is apt to find in out-of-the-way shops specimens having this provenance—and one still sees beautifully wrought plastrons, fluted in Maximilian style, dating from the time of Mahomet the Conqueror and deeply stamped with the mark of the St. Iréné armory, which can be bought for a few shillings. In a general way, however, the world has changed since Carrand's time. Collectors there are now who are specialists in the armor of the Near East, who know its varieties and periods and love the art of its ancient makers. This quickening of interest has been due to many things, but mainly to the spread of the knowledge of Mohammedan art fostered by special expositions, e. g., in Cairo, Madrid, Munich, Berlin, and South Kensington. Thus it is widely known that Mohammedan metalwork reached a high point of development during the thirteenth and fourteenth

centuries. The quality of its metal was then excellent and much of it was of a peculiar fibrous or closely layered texture which is best known in Damascus steel.

In a sense, however, the term "Damascus steel" is a misnomer: it commonly refers to any kind of Oriental laminated or "watered" steel, i. e., produced throughout all Arab countries as well as in Turkey, Persia, India, Japan, and Malay countries. Even in Europe it was made for the "twist" gun barrels of England, France, and Germany. This metal with its beautifully wavy texture appears to have been formed in a variety of ways (see von Lenz, Zeitschrift für Historische Waffenkunde, IV, 1906, pp. 132–142, and Belajen, St. Petersburg, 1906). Some of it was made up of iron and steel, of different colors and degrees of hardness, which were "spun" or welded together and then drawn out, bent, and rewelded by processes which naturally varied extremely in the hands of workmen of different talents in many countries. Much of it, on the other hand, and of cheaper grade, was produced "artificially," by processes of crucible work, heating and cooling, during which such components in the fused mass as slag and graphite rearranged themselves in the metal. Made in either way, the result was similar, but the variations were marked enough to become associated with special localities and special artists or families of artists. The average European cannot justly estimate the value placed by Orientals upon splendid examples of this metal. Only in an occa-



PLATE LXII

GAUNTLET SWORD-HILT, SOUTH INDIAN
XVII CENTURY
GEORGE C. STONE COLLECTION

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sional reference does one get an idea of this, even in popular literature, as when Marion Crawford pictures in one of his stories a Greek banker of fabulous wealth whose two most-prized artistic treasures were a Greek statue and a Damascus blade. Certain it is that in the markets of the East a western collector, who for the rest has a well-matured idea of high prices, is sometimes shocked at the "mad" sum which a rich Oriental will pay for a blade of highest class. Several varieties of Damascus swords are shown in room H. 5, Cases O. 49 and 56, some of which, North Indian and Persian, are exceedingly good examples of their type. (Lent by George C. Stone.) We should not, however, look upon all Damascus blades as precious. There are blades and blades in these as in other swords—every marketplace in the East has examples of them, some of which, as in Ahmedabad or Jaipur, can be purchased for a few rupees. This type of steel, we may add, is still being produced in out-of-the-way localities. It is generally known that many of the best blades are richly decorated with precious metals (Case O. 56) in damaskeening; that is, by a process which attaches gold, for example, to the steel within sharp grooves or scratches, whose "burr"-edges are hammered down and clamp the overlaid metal into place. In later arms the damaskeening is apt to be superficial, and is cleaned away in the course of time. In this poor quality of workmanship the scratches which attach the gold are many and thready. Arms of this inferior grade are still being

made and fill the bazaars of northern Africa, Persia, and the Russian Orient. They are made less for parade than for foreign consumption.

It is safe to say that the older a Mohammedan arm or fragment of armor, the more substantial its make and the more beautiful its ornaments. To realize this, one need only contrast with a modern helmet (Case O. 61) the remarkable series of Turkish-Saracenic casques shown in Cases O. 58–60. These date mainly from 1400 to 1550 and are therefore from a good period, which saw the storming of Constantinople and the brilliant rise of the Ottoman power. The casques are large in size, intended to cover a heavy turban; they are richly decorated, embossed, engraved, damaskeened, showing either geometrical ornaments or inscriptions from the Koran. (Plate LXI.)

As noted above, armor from this region of the Orient has changed surprisingly little. In its essentials it retains the fashion of earlier centuries. Only in details has it undergone changes. The early chain-mail (Case O. 60) is large-linked, sometimes showing on each link a stamped ornament, which takes the form of lines, grooves, dots, even of scriptural texts. Each link of early mail is riveted, sometimes with two or more pegs which pierce the metal completely. In more modern mail the brass links become smaller, lack rivets, and are frequently of various colored metals, showy, but of little practical strength. Such mail is produced today in out-of-the-way places and is possibly worn for service. As



PLATE LXIII

KATÂH HANDLES, SOUTH INDIAN, XVII CENTURY

GEORGE C. STONE COLLECTION

SEE PAGE 144

recently at least as 1907 several soldiers appeared near Batum (Trans-Caucasia) clad in chain-mail.

The Orient, then, has retained a fashion in armor which was best developed in Europe during the twelfth and thirteenth centuries. And it has gone no further in fundamental changes than the stage noted in the armor of Europe at about the year 1400 when plates of metal were used to reinforce chain-mail. Armor of this kind appeared everywhere among Eastern, especially Mohammedan, nations. Sometimes the plates appeared as splints corresponding to rows of links of chain (Case O. 58), and thus formed jazerans (see p. 25). In other instances a few large plates were set in or over the chain-mail, as in janissaries' corselets, or in the armor of "four mirrors" (*chaka aina*), which is typical of India and Persia from early historical time, if we read Xenophon correctly. These "mirrors" are best known in northern India where they are sometimes made of Damascus steel and are richly damaskeened with gold (Case O. 61; see also Moore Collection, Addition E. 12). With these, small casques were worn, with narrow camail (see p. 38): also arm defenses, *brassards* (Cases O. 61, 52, 57), which were decorated in the style of the corselet. The shield which completed the panoply was usually a round arm-shield, sometimes of considerable size. At other times it was reduced to a small fist-shield like the ones which appeared in Europe from the fourteenth to the sixteenth centuries. These shields are sometimes decorated richly (Cases 61, 47): they are apt to bear four

bosses which serve to attach the carrying-straps.

So similar are these pieces of armor from various points of the Orient that one who is not an expert would probably not be able to distinguish armor from Turkey, Persia, Algeria, North India, or Circassia. And as we have noted, the types remain fairly constant for many centuries. The arms, too, show marked similarity. The sabre, for example, changes but little in shape, hilt, or ornamentation. The straight sword, whether Hispano-Arab (Case O. 62 and Plate LXI) or North Indian (Case O. 49), has kept the same "lines" for centuries. The gauntlet sword (Cases O. 48, 52), though commonly Indian, extended its use over a wide area, and the short dagger with its curved end and heavy handle is also distributed broadly. In the adornment of these arms, later ones notably, the Oriental taste is apt to express itself in handles of precious jade inset with pearls, rubies, sapphires, emeralds, even diamonds (Cases O. 61, 46, also in Bishop Collection of jade). In India, especially South India, cut steel makes its appearance frequently as a means of decoration, where handles of fist-daggers (*katâh*) are richly perforated and sculptured. Of these no better examples are known than the seventeenth-century specimens (Cases O. 48, 57) from the armory of the Rajah of Tanjore. (Borrowed from the George C. Stone Collection.) The workmanship here curiously parallels, or possibly copies, the cut steel well known at that time in western Europe (compare north gallery, H. 8, Case 82). (Plates LXII to LXIV.)



PLATE LXIV

SOUTH INDIAN DAGGERS, XVII CENTURY
GEORGE C. STONE COLLECTION

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Pole-arms in this region of Asia rarely show a wide variety of forms. Halberds as ceremonial arms are practically absent. Spears were used largely by horsemen and, for practical reasons, could not have developed heavy heads. The majority of Oriental pole-arms are made to be thrown: they are, therefore, beautifully balanced, light, and carefully shafted.

Among short-shafted weapons were numerous forms of maces, war-hatchets, and the like (Cases O. 47 and 54).

Bows are a favorite arm in the East, and archers, especially Turkish, were ever renowned for their strength and skill. The longbow early disappeared from use, supplanted by the Turkish-Indian form, which was short, made up of layers of sinew, wood, and horn. A bow of this type (Case O. 54) was a stronger arm than the longbow of Europe. Thus, a Turkish bow is known to have had an effective range of four hundred meters, as opposed to two hundred for the longbow. Crossbows were rarely used.

Oriental banners (see gallery walls) are seldom rectangular in outline. They are not apt to bear crests or similar heraldic devices. In their place appear inscriptions from the Koran and the names of the prophets.

The arms and armor of the Far East, other than Japanese, can hardly be reviewed in the present catalogue. They represent a section apart and are represented meagerly in the Museum collection.

Malayan arms appear only in two krisses (Stone Collection), which, by the way, are among the most beautiful of their kind extant (Case O. 63). Chinese armor (Case O. 55) is shown only in fragments, which suggest relationships, on the one hand, with the Korean-Japanese, on the other, with the Tartar and other Central Asiatic defenses. In a general way, China is singularly deficient in armor or arms. For many centuries it has been a nation in which a military caste has no place. Armor, therefore, degenerated into a fanciful costume made up largely of embroidery, tinsel, and brass. Indeed, should one examine the many antiquity shops of Shanghai or Canton, one would hardly discover a single example of a Chinese helmet or sword.

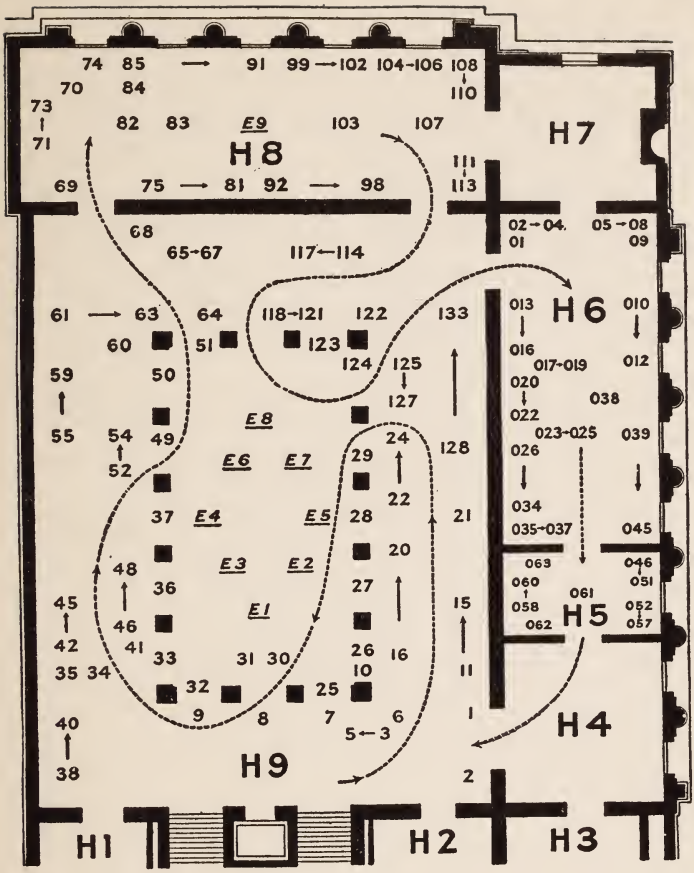


PLATE LXV

PLAN OF GALLERIES OF ARMOR

SEE PAGE 10

LIST OF
PERSONAGES AND FAMILIES (EUROPEAN)
WHOSE ARMS, PERSONAL OR STATE, ARE REPRESENTED IN THE COLLECTION

BY BASHFORD DEAN AND
ROBERT T. NICHOL

In the following list the objects either bear intrinsic evidence of their early ownership or are known to have had a provenance which makes their attribution reasonably clear. In cases less convincing, a question mark is added. The dates here given are usually approximate. For convenient reference, the objects themselves are distinguished by a purple mark.

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Aben-Achmet (Granada)?.....	Sword and Koran case	1490	04.3.458–9	H 5	O.63
Abencerage (see Aben-Achmet)					
Albani (Roman).....	Rapier.....	1580	04.3.23	H 8	91
Albani (see Clement XI)					
Alexander VII.....	Curtain (dossal).....	1659	11.159	H 9	near 119
Alexander VIII.....	Banner.....	1690	14.49	H 9	near 68
Alva, Duke of?.....	Brigandine.....	1530	1532	H 9	24
" " "	Embossed half-armor.	1570	714	H 8	104
Ambrosini (Bologna)..	Two-handed sword...	1500	935	H 9	21
Asinière, Count.....	Powder horn.....	1568	1491	H 8	101
Augustus the Strong..	Regimental pikes....	1690	73, 81	H 9	near 114
" " " ..	Hunting horn.....	1690	1620	H 9	near 68

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Augustus the Strong?..	Hunting knife.....	1700	Dean Coll.	H 9	127
" " " ..	Regimental miner's axe.....	1700	1368	H 9	127
" " " ..	Carrousel lances.....	1700	167, 169	H 8	
" " " ..	Regimental miner's axe.....	1700	1369	H 9	127
" " " ..	Axe of guard.....	1700	219	H 5	near O. 58
" " " ..	Regimental miner's axe.....	1706	1367	H 9	127
" " " ..	Regimental miner's axe.....	1717	1370	H 9	127
" " " ..	Crossbow winder and box of quarrels, presented to Duke Ernest August I of Weimar.....	1720	1576	H 8	106
" " " ..	Short sword of Polish guard.....	1720	1021	H 9	122
" " " ..	Partisan of state guard.....	1720	345	H 9	near 65
Augustus III.....	Short sword of Polish guard.....	1750	1019	H 9	122
Baden-Baden, Philibert ?.....	Halberd.....	1580	385	H 9	near 49
Baden-Baden, Philibert ?.....	"	1580	12.141.8	H 9	near 123
Bamberg, Prince Bishop (see Hatzfeldt)					
Bassenheim, Count von.....	Chamfron.....	1550	1641	H 9	near 50
Bassompièrre, Marquis de.....	Armor.....	1620	697	H 9	118
Batory, Stephen (Poland).....	Sword of guard.....	1580	14.99.17	H 9	125
Benaglia (of Bergamo, Treviso, and Verona)	Partisan.....	1550	366	H 9	near 68
Besserer v. Thalfinger.	Banner.....	1730	1817	H 9	
Boabdil (see Aben-Achmet)					
Bock (Brandenburg)..	Badge.....	1450	774	H 9	18
Borghese, Camillo (Pope Paul V).....	Fauchard.....	1605	450	H 8	69
Bourbon, Charles de..	Half-armor.....	1520	716	H 9	34

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Bourbon, Francis de...	Fauchards....	1575	04.3.86–96	H 9	near 25-36
Brescia, Duke of.....	Guisarme.....	1480	1	H 9	near 23
Can Grande (see Scaliger)					
Capece-Galeota (Naples).....	Bow and quiver.....	1500	1585	H 8	106
Capel, Sir Giles.....	Heaume.....	1510	04.3.274	H 9	59
Carocci (Naples ?)....	Feather staff.....	1510	04.3.464	H 9	23
Carrara.....	Shield.....	1650	04.3.107	H 9	near 114
Carvajales.....	Part of engraved armor.....	1560	794	H 8	73
Castelli (Sicily and Naples).....	Badge.....	1400	04.3.405	H 9	8
Castile and Leon.....	Badge.....	1400	04.3.384	H 9	8
Cavalli (Venice and Verona).....	Fauchard.....	1550	392	H 9	near 37
Cavalli (Venice and Verona).....	"	1550	374	H 8	near 70
Charles I (England)? .	Wheellock pistol.....	1639	10.42	H 8	86
" III (Spain)...	Regimental sword....	1713	1025	H 9	125
" V (Austria)...	Small cannon.....	1523	1814	H 8	46
" " " ...	Defense of upper arm.	1535	878	H 8	74
" " " ...	Two-handed sword of guard.....	1540	04.3.290	H 8	107
" " " ...	Hunting knife.....	1540	04.3.152	H 9	127
" " " ?..	Sword.....	1545	1204	H 8	91
" " " ?..	Gauntlets.....	1545	900	H 8	102
" " " ...	Wheellock pistol.....	1550	1425	H 8	86
Charles VI (Bavaria)..	Halberd.....	1600	349	H 9	near 61
Charles VI (Austria)..	Spontoon.....	1725	401	H 9	near 117
" " " ..	"	1725	405	H 9	near 117
" " " ..	Banner.....	1730	1817	H 9	
" " " ..	Spontoon-partisan...	1740	403	H 9	near 114
Charles Emmanuel I?.	Wheellock pistols....	1590	1398	H 9	64
" " I?.	Lance.....	1600	325	H 9	near 117
" " I..	Partisan.....	1620	372	H 8	near 70
" " II.	Halberd.....	1650	17	H 8	near 80
" " "	Fowling crossbow....	1650	1583	H 8	106
" " "	Lance.....	1650	341	H 9	near 117
" " III	Banner.....	1750	1822	H 8	near 70
Chesney du (Brittany)	Archer's bracer.....	1600	1615	H 8	106
Chigi, Fabio (see Alexander VII)					

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Christian I (Saxony)..	Morion.....	1575	650	H 8	111
" " " ..	"	1575	651	H 8	111
" " " ..	Pole-axe.....	1580	04.3.68	H 8	69
" " " ..	Cartridge belt.....	1580	1486	H 9	62
" " " ..	Gauntlet of state guard.....	1580	907	H 8	102
" " " ..	Morion.....	1580	639	H 8	111
" " " ..	"	1580	633	H 8	111
" " " ..	"	1580	04.3.225	H 8	111
" " " ..	"	1585	649	H 8	111
" " " ..	"	1585	652	H 8	111
" " " ..	State partisan.....	1590	120	H 8	near 89
Christian II (Saxony).	Casque of state guard.....	1595	04.3.224	H 8	111
" " " .	Cartridge belt.....	1600	Dean Coll.	H 9	62
" " " .	State halberd.....	1601	280	H 9	near 61
" " " .	" "	1609	294	H 9	near 123
Christian VI (Denmark).....	Harness.....	1740	04.3.471	H 9	near 133
Clement XI.....	State partisan.....	1700	279	H 9	near 67
Colonna, Marco Antonio.....	Armor for man and horse.....	1575	708	H 8	E 9
Contarino, either doge Francesco or Nicolo.	State fauchard.....	1525–1530	04.3.103	H 9	near 36
Cordoba, Gonzalo Fernandez de.....	Armor.....	1570	04.3.270	H 8	84
Cossa, Baltasare (see John XXIII, Pope)					
Diane de Poitiers.....	Stirrup.....	1550	1759	H 9	47
Diuvenvoorde (Holland).....	Partisan.....	1500	389	H 9	near 35
Donato, doge Leonardo.....	State fauchards.....	1610	04.3.101,102	H 9	near 123
Dorothea, Duchess of Saxony and Brunswick.....	Armor of state guard.	1570	711A	H 8	51 92
Dorothea, Duchess of Saxony and Brunswick.....	Cartridge box.....	1571	1500	H 8	101
Dorrer (Nuremberg)..	Partisan.....	1600	263	H 9	near 50
Douglas (Scotland)....	Badge.....	1350	04.3.400	H 9	8
Dreux, de (see Lorraine)					

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Ehrenreiter (East Friesland)	Crossbow and windlass	1584	1572	H 8	106
Fanning, Captain	Revolutionary gorget	1777	x5	H 9	133
Ferdinand I (Austria)	Hunting spear	1548	327	H 9	near 58
" " "	Coustille	1550	370	H 8	70
" " "	Wheellock rifle	1550	1387	H 8	87
" " "	Coustille	1551	283	H 8	near 99
" " "	"	1551	277	H 9	near 29
" " "	Couteau de brêche	1551	373	H 9	near 67
" " "	Casque of guard	1555	04.3.216	H 8	110
" " "	Boar spear	1558	371	H 9	near 59
" " "	State halberd	1563	145	H 9	near 61
Ferdinand (Bavaria)	Halberd	1670	275	H 9	near 123
Ferdinand (Brunswick)	Spontoon of fusileers	1760	53	H 9	near 114
Ferdinand (Tyrol)	Halberd	1596	376	H 9	near 51
Ferdinand II (Austria)	Wheellock pistols	1620	1401	H 9	64
" " "	Pole-axe	1620	04.3.97	H 9	near 28
Ferdinand VI	Banner	1750	11.181.2	H 9	near 50
" "	Pike-spontoon	1750	428	H 9	near 66
Fonsecas (Roman) (Hayn?)	Horse trapping	1650	x6	H 8	near 111
Foscari (Venetian)	Armor	1590	04.3.257	H 8	99
Francis I (France)	Powder horn	1520	1495	H 9	63
" " (Austria)	Partisan	1745	425	H 9	near 114
" " "	Lance	1745	426	H 9	near 114
" " "	Partisan	1750	230	H 9	near 116
Francis I and Maria Theresa	Partisan-spontoon	1745	431	H 9	near 114
Francis II (Austria)	Banner	1800	1823	H 9	near 36
Frederick Augustus (see Augustus)					
Frederick I (Prussia)	Flintlock pistols	1700	04.3.195–6	H 9	121
" " "	Hunting sword and belt	1710	1239	H 9	127
Frederick the Great (Prussia)	Head of banner stave	1750	235	H 9	near 114
Frederick the Great (Prussia)	Spontoon	1750	236	H 9	near 114
Frederick (Nassau)	Commemorative sword	1650?	1153	H 9	133
Frederick Louis (Prince of Wales)?	Broadsword	1750?	1150	H 9	122
Frederick William I (Prussia)	Spontoon in prince's regiment	1700	67	H 9	near 114

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Frederick William I (Prussia)	Banner	1735	Dean Coll.	H 9	near 52
Fürstenberg, Landgraf von	Spontoon	1700	141	H 9	near 114
Gaucourt, de	Sword	1425	04.3.276	H 9	18
Gonzaga, Duke of	Fauchard	1550	04.3.84	H 9	near 36
Gonzaga, Galeazzo	Bit	1400	04.3.478	H 9	8
Guidobaldo II (Urbino)	Shoulder piece	1550	714	H 8	104
Guise, Duc de (Francis of Lorraine)?	Gauntlets	1563?	04.3.34, 35	H 8	102
Gustavus Adolphus	Commemorative sword	1650?	1153	H 9	133
Guzman, Filippo	Breastplate	1600	867	H 9	122
" "	Wheellock pistol	1630	1426	H 8	86
Hatzfeldt, Franz von	State partisan	1642	350	H 9	near 49
Hedwig Kurfürstin (Saxony)	State halberd	1609	294	H 9	near 123
Henry II (France)	Mace	1540	04.3.59	H 8	102
" " "	Chamfron	1539	04.3.253	H 9	near 35
" " "	Burganet	1550	04.3.217	H 8	103
" " " ?	"	1550	606	H 8	101
" " "	Pistols and primer	1550	1433, 1523	H 8	103
" " " ?	Burganet	1550	613	H 8	109
" " " ?	Morion, cabasset, and shield	1558	1851, 1853, 1884	H 8	103
Henry III (France)	Helmet	1550	04.3.201	H 8	109
Henry IV (France)	Sword	1600	1193	H 8	90
" " " ?	Cannon presented to de Vendôme	1606	1813	H 9	near 123
Henry VIII (England)?	Skirt of armor	1530	790	H 9	near 42
" " "	Pistol-bucklers	1540	745, 746	H 9	near 40
Henry, Prince of Wales	Gauntlets	1610?	899	H 8	102
Hohenens, Marcus Sittis von (Prince archbishop of Salzburg)	Fauchard	XVII	459	H 9	near 67
Innocent XI (see Odescalchi)					
Joan of Arc ?	Basinet	1400	04.3.241	H 9	10
Johann Georg I (Saxony)	Halberds	1620	04.3.78–80	H 9	near 124
Johann Georg II (Saxony)?	Rapier	1650	1117	H 9	125

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Johann Georg III (Saxony)?	Wheellock pistols	1675	1399	H 9	64
Johann Georg III (Saxony)?	State partisan	1680	331	H 8	69
Johann Georg III (Saxony)?	" "	1680	393	H 9	near 29
Johann Georg III (Saxony)	Battle-axe	1700	332	H 9	near 124
John III. Sobieski	State partisan	1680	251	H 9	near 117
" " "	" "	1680	378	H 8	69
John XXIII, Pope	Badge	1410	04.3.407	H 9	8
Jones, John Paul	Corselet	1775	Dean Coll.	H 9	near 133
Joseph I (Austria)	Couteau de brêche	1694	369	H 9	near 29
Julian III	Casque of state guard	1550	04.3.222	H 8	110
Julius II (Brunswick)	Armor of state guard	1570	711A	H 8	92
" " "	Cartridge box	1571	1500	H 8	101
" " "	Two-handed sword	1573	04.3.60	H 8	near 93
Lattisani (see Gonzaga)					
Leo X (see Medici, Giovanni de')					
L'Espin, de (Antwerp)	Banner	1634	1815	H 8	near 75
" " "	"	1810?	1826	H 9	near 61
Leze (Venice)	Buckler	1570	750	H 9	near 56
Linares, Marquis de (see Guzman)					
Lorraine, Duke of (de Dreux)	Spur	1400	1737	H 9	16
Lorraine (Charles the Great)?	Partisan	1570	266	H 8	70
Lorraine (Charles the Great)	Morion-cabasset	1580	532	H 9	60
Lorraine (Charles the Great)?	Partisan	1600	257	H 8	70
Lorraine (Charles the Great)?	Armor	1560	1666, 717	H 8	75
Louis XIII (France)?	Scepter	1611?	04.3.475	H 8	107
" " " ?	Neck armor	1620	883	H 8	90
" " "	Burganet	1640	604	H 8	107
" " "	Wheellock gun	1640	04.3.164	H 8	87
" " " ?	Lantern of Royal Treasury	1640	04.3.480	H 9	near 7
Louis XIV "	State partisan	1680	454	H 9	119
" " "	Partisan, regimental	1680	27	H 9	near 65

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Louis XIV (France)..	Corselet of state guard.....	1690	868	H 9	119
" " " ..	Partisans of channel guards.....	1710	04.3.64, 65	H 8	70
" " " ..	Parade casque and shield.....	1710	04.3.259, 260	H 9	119
Louis XV " ..	Powder flask.....	1725	1490	H 9	63
" " " ..	Harness given to king of Denmark.....	1750	04.3.471	H 9	near 133
" " " ..	Banner.....	1750	1829	H 8	near 113
Louis XVI " ...	Banner.....	1780	13.118	H 8	
Maria Theresa.....	Partisan-spontoon....	1740	431	H 9	near 114
" "	Partisan.....	1750?	230	H 9	near 116
Marschalk (see Zoller)					
Matthias (Austria)....	Halberd.....	1593	04.3.67	H 8	near 93
" "	State halberd.....	1612	387	H 9	near 123
" "	" "	1612	461	H 9	near 123
" "	Halberd.....	1600	12.141.6	H 8	69
Maugiron, Marquis de.	Duelling rapier.....	1580	1182	H 8	82
Maurice of Orange ?..	Neck armor.....	1620	885	H 8	90
Maximilian I (Bavaria)	Wheellock harquebus.	1600	04.3.179	H 8	87
Maximilian, Joseph (Bavaria).....	Couteau de brêche...	1771	370	H 8	70
Maximilian II (Austria).....	Halberd.....	1570	08.261.3	H 9	near 51
Maximilian II (Austria).....	Fauchard.....	1570	268	H 9	near 28
Maximilian II (Bavaria).....	Lock of matchlock...	1710	1484	H 9	62
Medici, Cosmo I, de'..	Casque of state guard.....	1550	04.3.219	H 8	107
" " " "...	Casque of state guard.....	1550	615	H 8	107
" " " "...	Halberd of guard....	1550	32	H 8	near 104
" Francesco II...	Banner.....	1735	13.116.2	H 9	near 51
" Giovanni.....	Presentation sword....	1516	1203	H 9	46
" "	Small banner.....	1520	1832	H 9	46
" Lorenzo.....	Guisarme of guard...	1490	37	H 9	near 26
Memmo, doge Marc-Antonio.....	State fauchards.....	1612	04.3.101, 102	H 9	near 51, 123
Mocenigo (? doge Alvise).....	Sword.....	1575	04.3.27	H 9	46
Monferrat, Marquis (see Paleologos)					

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Monte, de (see Julian III)					
Montmorency	Drum	1700	04.3.469	H 9	near 133
Montpensier (see Bourbon)					
Moritz (Nassau)?	Breastplate	1540	1855	H 8	107
Muniz, Juan	Halberd	1659	20	H 8	near 104
Napoleon I ?	Fowling-piece presented to Marshal Ney	1810	Rook Coll.	H 9	121
Ney, Marshal ?	Fowling-piece	1810	Rook Coll.	H 9	121
Odescalchi, Benedetto	Stirrups	1680	1760	H 9	47
Oñate, Marquis	Breastplate	1555	04.3.278	H 8	80
Ottoboni, Pietro (see Alexander VIII)					
Paleologos, John ?	Ivory saddle	1440	04.3.250	H 9	9
Paré, Ambrose?	Surgical instrument	1550	1769	H 9	68
Paul V (see Borghese)					
Peter the Great	Spontoon of guard	1700	143	H 9	near 114
Philibert, Emmanuel (Savoy)?	Wheellock gun	1575	04.3.180	H 8	87
Philibert, Emmanuel (Savoy)?	Powder horn	1575	1448	H 9	63
Philibert, Emmanuel (Savoy)?	Key of wheellock	1575	04.3.183	H 8	87
Philibert, Emmanuel (Savoy)?	Helmet	1575	607	H 8	109
Philibert, Emmanuel (Savoy)	Halberd (military fork)	1579	326	H 9	near 49
Philip II (Spain) (when prince)	Helmet	1540	631	H 8	113
Philip II	Armor	1554	04.3.278	H 8	80
" "	Lance rest	1554	914	H 9	60
" "	Gauntlets	1555	901	H 8	102
" "	Buckler (adarga)	1560	752	H 9	near 61
" "	Mace-pistol	1565	1324	H 8	102
" "	Saddle iron	1565	1678	H 8	83
" " ?	Sword cane	1575	04.3.42	H 8	91
" V	State partisan	1715	333	H 8	70
" "	Banner	1725	09.174	H 8	near 89
Pisani, doge Luigi	State fauchard	1735	04.3.104	H 9	near 42
Poitiers, Diane de (see Diane)					
Preelaert (Bruges)	Banner	1810?	1826	H 9	near 61

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Preysing, Baron von?..	Complete armor	1630	702	H 9	124
" Graf Max...	Harquebus.....	1700	96.5.29	H 9	121
Quinones, Count of Luna in Leon.....	Badge.....	XIV	04.3.361	H 9	8
Rasson (Tournai).....	Banner.....	XVIII	12.162.6	H 9	near 59
Ratcliffe, Thomas (see Sussex)					
Reitenau, Wolfgang Dietrich von (Salzburg).....	State halberds.....	1589	328, 300	H 8	near 80
Rinschot, Count.....	Banner.....	1634	1815	H 8	near 75
Rivière, Baron (see Rinschot)					
Rojas (Aragon).....	Badge.....	1350	04.3.344	H 9	8
Romano (Andalusia) (Barco?).....	Banner.....	1490	Dean Coll.	H 9	17
Rota (Venetian).....	Fauchard.....	1550	343	H 8	near 70
St. Pierre-Yette (see Rinschot)					
Salzburg (see Reitenau)					
Savoy-Nemours, Jeanne.....	Fowling crossbow....	1650	1583	H 8	106
Scaliger (Can Grande).	Stirrup.....	1320	1765	H 9	18
Scudamore, Sir James.	Armor.....	1585	11.128	H 8	94
Sessa, Duke of (see Cordoba)					
Sigismund, Francis, Archduke.....	Halberd.....	1663	12.141.10	H 9	near 123
Sixtus V ?.....	Rapier of the Albani.	1585	04.3.23	H 8	91
Smerowski (Poland)...	Embroidered hanging	1600?	1831	H 9	125
Smith, Captain John..	Shield	1585	04.3.277	H 8	92
Sobieski (see John III. Sobieski)					
Söning of Nördlingen (Bavaria).....	Wheellock pistol.....	1700	04.3.194	H 9	64
Spaur (Bavaria).....	Partisan.....	1600	295	H 9	near 50
Sussex, Earl of.....	Gauntlets.....	1583	12.87	H 8	94
Teixeira.....	Standard.....	XVIII	12.162.1	H 9	near 2
Theodore, Johann (Bavaria).....	Coustille.....	1528	361	H 9	near 29
Tiepolo.....	Fauchard.....	XVI	12 141.5	H 8	70
"	"	XVI	12.141.7	H 8	69
" ?.....	"	1520	264	H 8	70
"	"	1530	273	H 8	70

NAME	OBJECT	DATE	NUMBER	ROOM	CASE
Trémouille, Marquis de la	Helmet	1590?	596	H 8	108
Ulrich V (Württemberg)	Crossbow	1460	04.3.36	H 9	17
Valmarana (Venice)	Fauchard	XVI	12.141.7	H 8	69
" "	Fauchard	1530	273	H 8	70
Van Houssem (Amsterdam)	Harquebus (Pair)	XVII	1417	H 8	86
Vendôme, Duke of	Cannon	1606	1813	H 9	near 98
Victor Amadeus II (Savoy)	Spontoon	1700	04.3.71	H 8	near 70
Victor Amadeus II (Savoy)	"	1700	04.3.72	H 8	near 70
Victor Amadeus II (Savoy)	"	1700	04.3.70	H 8	near 69
Victor Amadeus II (Savoy)	"	1700	04.3.99	H 8	near 69
Victor Amadeus II (Savoy)	Banner	XVII	13.102		
Visconti	Pike-spontoon	1700	430	H 9	near 117
Werdenstein (Swabia)	Boar spear	1590	456	H 9	near 59
William IV (Bavaria)	Saddle	1529	1653	H 9	E 7
" " "	Chamfron	1529	1654	H 8	83
" " "	Crinet	1529	1655	H 9	E 5
" " " ?	Gauntlets	1530	1860	H 8	74
" " " ?	Beaver	1530	662	H 9	60
William V "	Partisan	1590	297	H 9	near 50
" " "	"	1590	306	H 8	near 80
" " "	"	1590	322	H 8	near 93
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